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OF THE  
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1904

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STATE BOARD OF HEALTH OF MAINE.

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OFFICE OF THE SECRETARY,

AUGUSTA, ME., September 12, 1904.

*To His Excellency, John F. Hill, Governor, and the Honorable  
Executive Council:*

GENTLEMEN:—I have the honor of submitting to you the  
Thirteenth Report of the State Board of Health of Maine, it  
being the sixth biennial report and for the years 1902 and 1903.

Very respectfully,

A. G. YOUNG, M. D., *Secretary.*

# MEMBERS OF THE BOARD—1902-1903.

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CHARLES D. SMITH, M. D., <i>President</i> ,	Portland.
E. C. JORDAN, C. E.,	Portland.
PROF. F. C. ROBINSON,	Brunswick.
G. M. WOODCOCK, M. D.,	Bangor.
M. C. WEDGEWOOD, M. D.,	Lewiston.
A. R. G. SMITH, M. D.,	North Whitefield.
A. G. YOUNG, M. D., <i>Secretary</i> ,	Augusta.

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## INTRODUCTORY.

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This report is for the two calendar years 1902 and 1903. Though an explanation may be in order, the secretary does not feel like apologizing for the lateness of the report. Aside from his routine duties as secretary of the State board of health and as registrar of vital statistics, the widely extended wave of small-pox infection at last struck us. Though a piece of good fortune for the citizens of the State, the legislative provision for a laboratory of hygiene entailed much labor and time in arranging for the opening of the laboratory, and still further additional work came inopportunately through another act of the legislature which provided that the secretary of the State board of health shall be the clerk and treasurer of the State board of embalming examiners. It is much to be regretted that this unusual pressure of epidemic and other business has seriously interfered with other work which the board deems almost of the first moment—keeping fully abreast of the progress of sanitary knowledge in our own country and in other countries and in rendering such information available for practical use by the people of our own State. The educative influence of a State board of health should be one of its most valuable functions. In the past two years the board has been compelled to suspend the publication of the Sanitary Inspector which for many years served as the official organ of the board, keeping the board more closely in touch with the local boards and with our people. It is hoped, however, at an early date to begin the publication of a bulletin which will take its place. Various pieces of new work have regretfully been delayed by the force of circumstances.

*Smallpox.*—For the two years 1902 and 1903, there were about 2,318 cases of smallpox in the State—222 in the former year and 2,096 in 1903, with 21 deaths in the two years from this cause. The epidemic prevalence of smallpox and of work

against smallpox have extended well into this year of publication, but for some time before the date of writing this, not a case of smallpox has been known in the State. As is said on page 15, work against smallpox is done at a disadvantage, but under the circumstances the State may well congratulate itself that the aggregate of effort has been so efficient.

*Other Infectious Diseases.*—The reports of the local boards of health give an exhibit of the prevalence of the common infectious diseases for their several localities. Though always existing in the State, there was no unusual prevalence of typhoid fever, diphtheria, and scarlet fever in 1902, and the same was true of the year 1903 with the exception of a serious epidemic of typhoid fever in Waterville and Augusta. Those epidemics somewhat increased the mortality rate for this disease for this year. The average number of deaths for the ten preceding years 1892-1901 was 212. In 1902, there were 162 deaths from this cause in the state and in 1903, 225. The average number of deaths from diphtheria in the ten preceding years had been 185 per year; but in the two years for which this report is made, it happened that the number of deaths from diphtheria was exactly alike, 115 for each year. For the decade preceding, there had been an average of 38 deaths from scarlet fever. In 1902, there were 13 deaths from this cause and in 1903, 18. The general tendency has been a considerable falling off in the mortality from these three diseases within the State. This is a gratifying fact; nevertheless, it is no indication that there is no unnecessary prevalence of these diseases. Though the work of the local boards is of great value, and though our people more and more appreciate the wisdom of having a care to prevent the existence of these diseases, we are far from the sanitary ideal which may be reached with comparative ease. There is hardly a limitation to the degree in which the prevalence of the infectious diseases may be restricted when our people are pervaded with a due sense of the enormous financial loss due to the presence of these diseases and the comparatively small expenditure required to save much of this loss. But this work must come from a public correctly educated in sanitary matters and co-operating with the local boards of health.

*Tuberculosis.*—This, for health officers and all persons who believe in lessening the tribute which the infectious diseases levy

upon our finances, State and private, is the one direction in which the greatest saving may be effected. Outranking all the other diseases ordinarily classified as infectious, the "great white plague" leaves in its wake clouds the blackness of which are relieved only by the hope that we may some day do still better than we do now. From the whole list of the other infectious diseases—typhoid fever, smallpox, measles, scarlet fever, whooping-cough, and diphtheria—there were 892 deaths in the two years, 1902-3. Tuberculosis, however, carried off 2,241 of our people, 1,120 as an average for each of those years. Though the results of public enlightening have been the cutting down of the death-rate from consumption by one-third since 1892, the more than 1,000 deaths from tuberculosis which still steadily follow year after year indicate the advisability of a still much further diminution of the financial loss of more than a million and a half dollars incurred every year in our State by the prevalence of tuberculosis, not to count the heart-aches and misery as anything in our calculation.

The plans for the suppression of tuberculosis which offer the greatest promise of good, must include the continued instruction of the public in regard to the infectious nature of consumption and in what precautionary measures are required to minimize the danger to others. In the affected household, trustworthy information on these points may well be said to be of priceless value; but for the best preventive and curative results, something more than this circularized system of instruction is needed. In numberless homes the rooms are too few and too limited in cubic air space to make the presence of a consumptive other than a source of serious danger to the other members of the family. Under the conditions which prevail in many a poor though intelligent family, with a consumptive member, particularly if children are present, one or more secondary cases are almost sure to follow in due time—though often a considerable lapse of time. Under these conditions, it would be a blessing to these families as well as to the patient if the sick one could have the advantage of proper care and treatment elsewhere.

For the incipient cases of consumption, the modern sanatorium treatment offers by far the best chance of cure, but aside from this, it sends its graduate patients out as sanitary missionaries. Each one of them has had a systematic training which

is invaluable as a safeguard against the communication of his disease to other persons, whether he goes on to a final cure or not. As to the curative value of the treatment, the evidence of the nearly 50 years' experience in Germany and of 20 years in this country since Trudeau started the work of his cottage sanatorium in the Adirondacks, has been so conclusive that the movement for thus saving the consumptive may well be said to have become world wide. In Germany alone, private benevolence has united with public charity and life insurance associations in the erection of sanatoriums for the care of consumptives until they number ninety or more. In our own country two states have attacked this most serious problem with the erection of commodious state sanatoriums. In at least six other states, legislative action of some kind or another has been taken with a view of extending aid to this class which of all others need temporary help. Aside from legislative action, medical societies, associations for the prevention of tuberculosis, or state boards of health in eleven states are working for the establishment of sanatoriums for the cure of tuberculosis.

*The Maine Sanatorium.*—The State board of health regards with much hope and some degree of satisfaction, its action in 1900 in interesting the public and in the initiation of a movement for the establishment of a sanatorium for the help of consumptives. Before this goes to press, the doors of this institution will be opened to its first lot of patients. Thus far, what has been accomplished has been made possible by the donations, mostly small, from the people of our own State and a few outside. Though the guiding idea has been to make it of the utmost value to our people, in the lack of endowments for free beds, or for the partial support of patients who need help, it is, for the present, necessary to charge each patient the actual cost of his board and treatment.

*The Laboratory of Hygiene.*—The work of the laboratory of hygiene has been of very great value, and the work for the laboratory has gradually and quite rapidly increased. Thus far, the work done has been limited quite closely to water analysis and aiding the local boards of health and physicians in the diagnosis of tuberculosis, diphtheria, and typhoid fever. As an aid in the determination of the necessary period of quarantine of cases of diphtheria, the laboratory has been doing a good work,



and should be used for that purpose still more than it is used.

To facilitate this work and to make the help of the laboratory readily accessible to all parts of the State, it is hoped that arrangements may very soon be perfected whereby all of the samples for the bacteriological branch of the laboratory may be returned by mail. The cost of transportation as compared with express rates will then be reduced by two-thirds, and it will further be a great convenience in many places where there is no express office.

*Special Investigations by the Laboratory.*—This report gives the results of quite an extended line of work in determining the practical value of a method of liberating formaldehyde gas for disinfecting purposes without the use of generators or any other special apparatus. The outcome of this work has been very satisfactory indeed and it is thought will be of great value to local boards of health. There is an urgent need of much other work for determining many other points at which practical sanitation needs help, and it is hoped that in the coming year still more work may be done in the line of original investigations.

*Isolation of Infectious Persons.*—In its treatment of the infectious sick and of persons who have been exposed to infection, the policy of the State board of health, in its own work, and in its advice to local boards of health, has been to inflict the least amount of inconvenience compatible with the safety of the public. In the management of outbreaks of diphtheria before the services of a laboratory of hygiene were available, the only safe rule was a fixed and fast rule which made the quarantine of sufficient duration to cover the longest periods of time during which the bacillus of diphtheria is found in the throats of patients during their convalescence. The three or four weeks of quarantine of the patient formerly recommended by the State board is not indeed so extended a period of time as the throats of convalescents, in some exceptional cases, serve as culture beds for the continued propagation of infection; but in many cases the bacilli disappear long before the termination of the three or four weeks. In these cases it is in the interest of the family or of the town or of both—whoever is bearing the burden of expense and annoyance—to have the quarantine raised as early as the patient's period of personal infectiousness has passed. The rule which should now be observed is to release the patient

from quarantine and give him his final disinfection as soon as two swabs from his throat taken upon alternate days—one day between swabs—show the absence of diphtheria infection. In cases of smallpox, while the only safe rule guiding the management of the patient is to keep him closely isolated until the last trace of desquamation has disappeared from the centre of the pocks, circumstances and character may often safely come in to mitigate the quarantine of exposed persons. The bichloride scrub for the exposed person, his vaccination, and a period of observation may often serve as a safe substitute for unmitigated quarantine.

## SECRETARY'S REPORT.

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There was no change in the membership of the board during the two years for which this report is made. The names and addresses of the members at the end of the year 1903, with the dates of expiration of their terms of office, were as follows:

A. R. G. Smith, M. D., North Whitefield, term ending January 31, 1904.

E. C. Jordan, C. E., Portland, term ending January 31, 1905.

M. C. Wedgwood, M. D., Lewiston, term ending January 31, 1906.

Prof. F. C. Robinson, Brunswick, term ending January 31, 1907.

G. M. Woodcock, M. D., Bangor, term ending January 31, 1908.

C. D. Smith, M. D., Portland, term ending January 31, 1909.

At the annual meeting in March, 1902, Dr. C. D. Smith was unanimously re-elected president for the ensuing year. The following committees were appointed by the president.

On Finance.—F. C. Robinson, E. C. Jordan, and C. D. Smith.

On Circulars and Other Publications.—M. C. Wedgwood, G. M. Woodcock, and A. G. Young.

On Sewerage and Drainage and the Disposal of Excreta.—E. C. Jordan, F. C. Robinson, A. R. G. Smith, and G. M. Woodcock.

On Ventilation.—E. C. Jordan and M. C. Wedgwood.

On Summer Resorts.—M. C. Wedgwood, E. C. Jordan, and C. D. Smith.

On Water and Water Supplies.—F. C. Robinson, M. C. Wedgwood, and A. G. Young.

On School Houses and School Hygiene.—F. C. Robinson, A. R. G. Smith, and A. G. Young.



On Quarantine.—C. D. Smith, M. C. Wedgwood, G. M. Woodcook, and A. G. Young.

On Legislation.—A. G. Young, C. D. Smith, and M. C. Wedgwood.

On Disinfection and Disinfectants.—F. C. Robinson, C. D. Smith, and A. G. Young.

On the Production and the Use of Vaccine Lymph, Antitoxin, and Other Inoculation Material.—C. D. Smith.

The forenoon session and the afternoon session were both devoted to discussion of the management of outbreaks of smallpox, and particularly what should be done under certain contingencies, and the examination of some decisions of the courts bearing upon the powers and duties of local boards of health in connection with outbreaks of infectious diseases.

At the second quarterly meeting of the State board of health held June 30, 1902, the secretary reported cases of smallpox or suspected cases investigated since the March meeting in Bridgton, April 10; Shiloh, April 14; Fryeburg, April 22; Portland, April 25; Scarboro, April 29; Shiloh, May 5; Bridgton, May 9; Hallowell Granite Quarries, May 16; same place, May 17; Houlton, May 19; Augusta, May 26; Turner Village, May 31; New Sharon, June 6; Houlton, June 10; Augusta, June 11; Mt. Vernon, June 13; Machias, June 16; Jackman and Moose River, June 20.

The secretary presented to the board a paper on "Some Points on the Diagnosis of Mild or Atypical Cases of Smallpox."

Dr. Estes Nichols, of Jackman, was appointed inspector for the State board of health to act in case of outbreaks of smallpox or other dangerous infectious disease in the townships surrounding Jackman.

As the evidence is conclusive that bubonic plague has existed in San Francisco, California, since the early part of the year 1900, that cases are now recurring there, and that the policy of both the municipality and of the state appears to be to deny the existence of the disease and to conceal the cases instead of taking efficient measures for the stamping out of the epidemic, it was voted that the State board of health of Maine endorses the resolutions which were adopted at a conference of the members of the state boards of health of the three states of Ohio, Indiana,

and Kentucky, and by representatives of various municipal and county boards, and cordially approves the sentiments therein expressed.

In a consideration of the matter of solidified formaldehyde as a disinfecting agent, the board regretted the fact that, in the absence of a properly equipped hygienic laboratory, it is unable to subject this agent and the disinfecting processes recommended by its manufacturers to thorough experimental tests. Meanwhile, the impression of the board is that this kind of formaldehyde disinfection may not be found efficient.

The board voted that it is desirable to use its influence to discourage the use of the word "varioid" and to advise in its stead the term "modified smallpox," and also to discourage the use of the word "pest-house" when referring to a hospital or other place for the isolation or quarantine of cases of smallpox or other infectious diseases.

The following questions were considered at the last meeting of the board, and again at this meeting. The opinion of the board is expressed in the answers to them.

1. If smallpox in the early papular stage should be found in a family in which there are persons who are not protected by vaccination, what should be the management of the well persons if the patient is promptly removed from the house? *Answer.* All of the other members of the family should be vaccinated immediately, and very carefully, and should then be kept under observation until there are unmistakable evidences of the success of the vaccination when they can be discharged from further surveillance.

2. If the smallpox patient remains in the house, and the other members of the household cannot promptly be removed and cared for elsewhere, what should be done? *Answer.* The other members of the household should without delay be vaccinated carefully, and remain in quarantine.

3. Smallpox in the vesicular or pustular stage is discovered in a family in which the other members are unvaccinated, or whose vaccinal protection is doubtful. For what period should the well persons be quarantined if the sick person is immediately removed from the house? *Answer.* Vaccinate all the other members of the family, and quarantine fourteen days, at least.

4. What should be the management if the patient is not removed from the house? *Answer.* Vaccinate all of the other members of the family, and quarantine all.

5. When the head of the family in whose home a case of smallpox has appeared, offers, in order to attend to his ordinary business, to go and board elsewhere after submitting to vaccination and complete disinfection, should he be permitted to go, when the case of smallpox is discovered in the papular stage? *Answer.* As a general rule, he may, if trustworthy and responsible.

6. When the case is found in the vesicular or pustular stage? *Answer.* He must remain.

7. Three tramps in a pest-house, one with smallpox in the period of dessication. The two who are well have been vaccinated four times unsuccessfully by the health officer. May the two who are well be disinfected at that stage and be released from quarantine? If so under what conditions as regards disinfection? *Answer.* The two persons who have remained well should be removed from the smallpox patient two weeks and held under quarantine. Then they may be disinfected and allowed to go.

8. At what stage in the management of a family in which there is a person convalescent from smallpox may the members of the household and the house receive their final disinfection and release from quarantine. As soon as desquamation has ceased, or shall the family be held in quarantine a period after the disinfection is done? *Answer.* The final disinfection may be done and the other persons may be released from quarantine as soon as desquamation has ceased, provided that the other members of the family have been successfully vaccinated, or have, after repeated unsuccessful vaccinations, been shown to be immune.

9. When a case of smallpox occurs in a boarding-house or hotel, and the owner demands removal what course should the local board of health pursue if the patient can be removed without great danger to his life? *Answer.* He should be moved to other quarters.

10. But, if in the opinion of the local board, removal would seriously endanger the patient, what should be done? *Answer.* (This was left unanswered.)

11. In case the patient could be removed without great danger to his health, but he refuses to be removed, what should be done? *Answer.* He should be removed by means of a warrant as is provided in Section 5, of Chapter 14, R. S., or without it as, in the judgment of the local board of health, seems expedient. As was decided in *Martin J. Haverty et. ux. vs. Joseph P. Bass*, (66 Maine 71), "The municipal officers of a city or town, in which any person is infected with a disease dangerous to the public health, are by statute empowered to remove such persons to a separate house, without first obtaining from two justices of the peace a warrant, directed to an officer, requiring a removal to be made. The issuing of such a warrant is not a condition upon which, but a means by which, a removal may be effected by municipal officers, whenever a resort to the aid of a warrant becomes necessary."

At a meeting of the board held October 11, 1902, which was the third quarterly meeting adjourned from September 29, the secretary read a statement relative to the prevalence of smallpox since June. July 15. A suspicious case in an Italian laborer was discovered on the Ashland and Fort Kent extension of the B. & A. R. R., case was in Nashville Plantation. July 16. A case was investigated in Bridgton by Dr. Smith, and was found to be chickenpox. July 17. A telegram announced the presence of a papular case of smallpox in Easton, which was found to be smallpox. July 19. Dr. Woodcock reported a case of smallpox in Hampden. Sept. 9. Three cases of smallpox were found in Winslow by the local board of health. Sept. 13. One case of smallpox was reported in Guilford, which was investigated by Dr. Woodcock. Oct. 7. Dr. Woodcock saw a case of smallpox in Montague.

The ever present need of a State laboratory was discussed and work to secure such a laboratory was left in the hands of the legislative committee. The undertakers' bill and the renewal of the epidemic fund was left in the charge of the same committee.

At a special meeting of the board December 24, the first matter considered was the smallpox situation—the imminent danger of an extensive prevalence of smallpox in the State unless stringent precautions are taken by the State board and the local boards. The secretary reported upon smallpox in the



lumber camps in the Jackman region, one case at Shiloh, the outbreak in Biddeford, Kennebunk, and Bethel. The correspondence relative to the treatment of the steerage passengers aboard the S. S. Lake Champlain, recently arrived at St. John with one case of smallpox in the steerage, was submitted to the board.

In view of the present great danger from epidemic diseases, and particularly from smallpox, it was voted that the board apply to the legislature for an epidemic fund of \$10,000.

It was the opinion of the State board of health that the reprehensible policy of the city of San Francisco and the state of California regarding the question of the presence of bubonic plague in San Francisco and the management of the cases is endangering the whole country, and it was the sentiment of the board that it is extremely important that this board be represented at a conference between the surgeon-general of the P. H. and M. H. S. and the State and territorial boards of health, quarantine authorities, and State health officers, which will probably be held in the near future. Dr. C. D. Smith was therefore designated as the delegate from this board.

At the annual meeting of the State board of health April 6, 1903, adjourned from March 30, Dr. C. D. Smith was again unanimously elected president. The following committees were appointed:

On Finance.—F. C. Robinson, E. C. Jordan, and C. D. Smith.

On Circulars and Other Publications.—M. C. Wedgwood, G. M. Woodcock, and A. G. Young.

On Sewerage and Drainage and the Disposal of Excreta.—E. C. Jordan, F. C. Robinson, A. R. G. Smith, and G. M. Woodcock.

On Ventilation.—E. C. Jordan and M. C. Wedgwood.

On Summer Resorts.—M. C. Wedgwood, E. C. Jordan, and C. D. Smith.

On Water and Water Supplies.—F. C. Robinson, M. C. Wedgwood, and A. G. Young.

On School Houses and School Hygiene.—F. C. Robinson, A. R. G. Smith, and A. G. Young.

On Quarantine.—C. D. Smith, M. C. Wedgwood, G. M. Woodcock, and A. G. Young.

On Legislation.—A. G. Young, F. C. Robinson, and M. C. Wedgewood.

On Disinfection and Disinfectants.—F. C. Robinson, C. D. Smith, and A. G. Young.

On the Production and the Use of Vaccine Lymph, Antitoxin, and Other Inoculation Material.—C. D. Smith.

On Organization and Operation of Laboratory.—A. G. Young, F. C. Robinson, and G. M. Woodcock.

A report was made by the secretary of the work which has lately been done for the control of smallpox and regarding the present status of the smallpox epidemic in the northern part of the State. The outbreak in the Jackman region has for some time been cleaned up and no new cases have appeared. In the Seven Islands region and the upper waters of the St. John, the work was finished about the middle of February, the camps were disinfected as thoroughly as was practicable and the medical inspector and his assistant left. The outbreak at Van Buren was wound up some time ago; but the importation of new cases from St. Leonards on the other side of the line gave rise to a new outbreak of which but few cases now remain. In Presque Isle, the last case of smallpox has been discharged from quarantine and the last house disinfected, and an efficient disinfection of the houses in that town and in the towns west of Presque Isle has been done. The State board had a large job in quarantining, vaccinating, and disinfecting in a large number of camps in the Fish river region. The work there was completed some time ago. The outbreak at Fort Kent, it is hoped, is at an end unless the infection is again imported. Scattered cases of smallpox are present in a considerable number of the Madawaska towns and the principal work of the inspectors of the State board of health is now being carried on in that region—a work which in the winter, particularly in the back settlements, was rendered very difficult by the extraordinary depth of the snow, and is still carried on with difficulty on account of the almost impassable condition of the roads where there is still about three feet of snow over a large part of the country.

The State board of health feels much gratified at the passage of the bill providing for the State laboratory of hygiene. The committee on the organization and operation of the laboratory

was, during the intermission between the forenoon and afternoon sessions, examining the available rooms for the laboratory in the city and took action for the purpose of securing as soon as possible a suitable man to take charge of the laboratory as director. It is deemed desirable to have the laboratory in operation as soon as possible.

Dr. Young was chosen as the representative of the board at the conference soon to be held between the surgeon-general and representatives of the state boards of health.

At the second quarterly meeting of the board held at the State House June 29, 1903, the committee on the laboratory reported that Dr. J. P. Russell has been chosen director of the laboratory, and that Mr. H. D. Evans has been engaged to take charge of the chemical department during the summer, and that the rooms are being fitted up as rapidly as possible.

Professor Robinson, Dr. Wedgwood, and the secretary were appointed as a committee to formulate rules and regulations relating to the preparation and transportation of the bodies of persons who have died of infectious diseases.

The secretary reported on the smallpox work recently done and particularly on that done between May 15 and June 18.

At the third quarterly meeting of the board October 19, in accordance with the adjournment of September 28, a letter of October 8 sent to the local boards of health of the cities and larger towns in regard to the order requiring the vaccination of lumbermen was read to the board by the secretary, together with some of the letters which had been received commending the board for its action and urging as strict an enforcement of the order as is practicable. It was the sentiment of the board that the order should be enforced, and it was voted to prosecute any lumber operator who makes no honest effort to comply with the requirements of the special order of September 12.

The Secretary was at the same time authorized to offer aid to operators so far as possible in having unvaccinated men who are already in camp vaccinated. It was thought that the board might arrange to have this work done for them more economically than the operators themselves could. The secretary was instructed, in arranging for this work to try to get men to do the vaccination for \$5.00 a day and expenses of travel and sub-

sistence, and to have the physicians employed to do the work furnish vaccine lymph at lowest cost price. If possibly, men can not be hired at \$5.00 a day to do this work, the board voted to bear the balance of the expense for services over \$5.00 a day.

The secretary made a verbal report on the work of the inspectors which is going on in the Madawaska region, at Lowelltown, on the old Canadian road above Jackman, and at Jackman.

At a special meeting of the State board of health November 10, held at the Preble House, the secretary reported that, at a recent visit to Greenville, he and the chairman of the board of selectmen of that town had entered into an agreement providing for co-operative work between the State board of health and the town of Greenville in caring for smallpox patients, and providing that the State board of health should have the use of its smallpox hospitals and isolation buildings for suspected cases of smallpox. This arrangement was deemed satisfactory by the board and was approved.

The secretary also reported to the board that smallpox had been present in the town of Athens for some time, that he had visited the town and plainly informed the local board of health of the nature of the disease, that he had instructed them in regard to what they should do, but that the local board of health has resigned and no trustworthy precautionary measures or efficient work for ridding the town of infection is being done.

Mr. Jordan moved that the town of Athens is hereby declared in a state of quarantine. It was so voted by the board.

Mr. Jordan further moved that the secretary be authorized to remove the quarantine against the town of Athens at such time as he may deem expedient. It was so voted.

At the fourth quarterly meeting of the State board of health December 28, the secretary submitted the following condensed written statement of the smallpox and other work outside the office which he has personally attended to.

October 1. To Chesterville at the call of Dr. Trefethen of Wilton. Drove to Chesterville and saw cases of smallpox in five houses.

October 2. Returned to Augusta.

October 5. As far as Bangor on way to Lowelltown.

October 6. To Lowelltown. Planned disinfection station and found that Dr. Boothby, the inspector, must have an assist-



ant. So many Canadians are coming in that he cannot handle them alone.

October 7. Took 2 A. M. train from Lowelltown to Augusta. Forty-eight Canadian woodsmen were aboard that train. The conductor said that there were ninety of them on a recent train.

October 8. To Brunswick and Portland. Returned on the 9th.

October 11. Went to Waterville to meet Dr. Smith.

October 12. Took 2.30 train to Bangor. Mr. Sears of Fort Kent met me at Bangor House. He goes to Lowelltown to help Dr. Boothby.

October 13. First train home. Telephone from Farmington started me at 11.45 with only ten minutes to get off without dinner. Drove from Winthrop to Strickland's Ferry to catch up-going train. Table girl at Stoddard House sick with smallpox. Had her removed in the night.

October 14. Home in the morning.

October 16. To Waterville 2.30. Back at 7.10. Telephone from secretary of Milford, wants me.

October 17. Took 6.37 train for Old Town and Milford. Saw cases of smallpox in Milford, Old Town, and Orono.

October 19. Meeting of the board.

October 20. To Insane Hospital to inspect patients arriving from Bangor.

October 21. Telephone from Dr. Dascomb, Skowhegan. Wants me in morning.

October 22. To Skowhegan. Case of smallpox from the woolen mill. Returned in the afternoon and with Dr. Russell went straight to Brunswick to see Prof. Robinson. Returned in the evening.

October 23. As far as Rockland on way to Camden.

October 24. Found five cases of smallpox in Camden in four different houses. Returned home in the afternoon.

October 26. Went to Amesbury, Mass., and back as far as Portland.

October 27. Portland to Augusta. In office rest of day.

November 1. Telephone from Dr. Merrill, two more cases smallpox, also suspicious cases in Athens.

November 2. To Lewiston and return.

November 3. In office early in the morning, then on 9.10 train for Skowhegan. Two new cases. Drove to Athens. Found typical cases of smallpox and that the disease had existed for some time. Investigated reports of smallpox in Cornville on the way back in the evening. At Hotel Coburn 9 P. M.

November 4. Home on first train. In office. Mr. Brown, deputy secretary of State, came in and said that he had been exposed to smallpox. Helped to disinfect him and arranged for disinfection Secretary of State's office in the evening.

November 5. Telephone from Old Town Hospital, wants me to come. Went to Old Town and returned to Bangor in the evening.

November 7. Bangor to Greenville. Mr. Desjardins went up with me. Severe storm of wind and snow and the boat did not run to Lily Bay. Went to Greenville Village. Had conference with local board and selectmen in regard to co-operation. At Moosehead Inn, telegram from Fairfield, from Foxcroft and from Old Town. On way down, secretary local board and doctor boarded the train at Foxcroft and wanted me to see suspected case. Could not. Ran by Old Town also. Stopped off at Benton Station and reached Hotel Gerald 9 in the evening.

November 8. Saw case of smallpox early this Sunday morning and caught the down train to Augusta. Made up questions for embalmers' examination.

November 10. Examination of undertakers, Portland.

November 12. To Skowhegan. Drove to Athens. Conference with local board and municipal officers.

November 13. From Skowhegan to Augusta.

November 14. 2.30 train to Winslow. Drove out five miles to see suspicious case. Returned in the evening.

November 17. To Bangor in the afternoon to meet Dr. Porter of Lincoln, who is to go to Macwahoc to look after smallpox in a lumber camp. Saw Dr. Woodcock and Dr. Varney also in the evening.

November 18. From Fairfield to Skowhegan. Drove to Athens. Failed to catch train on return to Skowhegan and drove to Fairfield. Home in evening.

November 19. To Bangor.

November 20. Returned to Augusta.

November 25. Went to Oakland. Saw three cases of smallpox. Returned in evening.

November 28. Took 3.57 train to Portland.

November 29. First train home in the morning.

December 1. To Skowhegan and then to Athens.

December 2. Drove from Athens to Brighton. Back to Athens and then to Skowhegan. In office the latter part of the afternoon. Telephone from Dr. Bell of Strong. Wants me to come.

December 3. 6.40 train to Strong. Saw two cases of chickenpox. In evening after dark drove five miles to Avon to see the children where these two cases originated. History of chickenpox.

December 4. From Strong to Augusta in forenoon.

December 5. To Bangor on 3.19 train. In evening saw Dr. Woodcock, Dr. Varney, and Mr. Fernandez of the Old Town local board.

Sunday, December 6. To Augusta in the morning.

December 8. To Boston. Last train in the afternoon.

December 9. In Boston till 5 o'clock, then took train to Concord, N. H.

December 10. Conferred with Dr. Watson in the morning and back as far as Portland in the evening.

December 15. Last train to Portland.

December 16. From Portland to Bradbury Station in Hollis. Found case of chickenpox. Took team and drove fourteen miles to Limington Center investigating cases where the Hollis case originated. Could get only history of chickenpox. Returned to Portland by driving across in the evening and catching down coming train at Steep Falls.

December 17. Morning train to Augusta.

December 21. To Clinton. Typical case of smallpox.

December 22. To Fairfield. Abortive case of smallpox.

The rules and regulations for the transportation of corpses adopted by the conference of State boards of health, in Baltimore, October 23 and 24 of this year, were adopted by our State board of health by virtue of the authority vested in the board in Chapter 98, Sections 1 and 2, Public Laws of 1903.

The secretary was instructed to appeal to the surgeon-general for aid upon our northern and western border in preventing the

importation and spread of smallpox, particularly at Lowelltown, at the boundary line on the old Canadian road from Quebec to Jackman, and in the Madawaska region.

The board approved of the plan of the committee on laboratory to carry on some experimental work for the purpose of determining the germicidal value of certain newly-proposed methods of using formaldehyde for disinfecting purposes.

It was voted that the funds at the disposal of the State board of health will not permit the board to make an exhibit at the Universal Exposition in St. Louis the coming year.



SMALLPOX IN MAINE IN 1902-3.

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Ever since its establishment the State board of health has had a keen appreciation of the danger of disastrous outbreaks of smallpox due to our geographical position and the character of the country and of much of its population in the northern part of the State. Geographically the northern portion of the State lies wedged up between the Province of Quebec and the Province of New Brunswick. In Quebec the Provincial board of health has long been recognized as an efficient public health organization and it works under laws which endow it with quite ample powers. But their frontier which stretches in our direction is a long way from official headquarters, and the status of local self government is probably no better in some of these places than it is in the unorganized or semi-organized townships with which our territory meets theirs.

In the Province of New Brunswick the Provincial board has always been found ready to co-operate with the public health authorities of Maine in any work for the restriction of the dangerous infectious diseases, but it has seemed that their units of administration in public health work is geographically so large that it is often impossible to have the promptest and most efficient work done in suppressing epidemic outbreaks. In the settlements up and down the St. John river on both sides the character of the population is practically the same. On our side of the line there has been in almost every town and organized plantation a local board of health whose express duty it has been to move promptly for the prevention of the spread of infectious diseases when these have appeared. The local boards of health have sometimes done the best they knew how. Sometimes they have not. It has, however, been an advantage when agents of the State board have been called to those northern towns to have local authorities there whose duty it is to co-operate with the State board and who can, if necessary, be required to co-operate.

One serious disadvantage which the State board meets when it is called to take action in this northern part of our State is that there is here an immense tract of forest land extending many miles north and south, and east and west, in which there are no local authorities but in which the lumber interest employs thousands of men, large numbers of whom come from other states or from these adjoining provinces. Smallpox work in this region has in the last two years been found to be hard and costly, particularly when the medical inspectors and nurses have to travel from twenty to seventy-five miles or even farther through the woods to infected camps by tote team, or canoe, or on foot. Particularly too, when lumber operators have not been willing to do their part in repairing the mischief due to their employment of unvaccinated crews, and when there was no relief to the service under statute law or the special orders of the State board of health. But I wish right here to pay deserved tribute to the many lumber operators who have very cordially co-operated with the State board of health in the work of preventing the appearance or the spread of smallpox in the camps.

Though the State board of health had been called upon to take a hand in many kinds of public health work, the fighting of epidemics in the woods was a new experience. The board had looked with distrust upon some of the provisions of the law of 1893, which was designed to enlarge its powers in connection with some of the most serious epidemic diseases, but one of these weak points was amended by act of the last legislature. One fact early forced itself upon the attention of the board as the only trustworthy measure of guarding against outbreaks of smallpox in the lumber camps, and that was the importance of the vaccination of the operatives in the lumber camps. Smallpox had for some years been unusually prevalent in the Canadian provinces and in most of the states of the Union. In some of the other states, smallpox had invaded the lumber camps with financial disaster to many of the operators, and much trouble to municipalities to which infection was carried from infected camps.

*Vaccination Order of the Board.*—After passing through the smallpox campaign of the winter of 1902-3, knowing that the man who is fully and successfully vaccinated will not take smallpox even in its milder form known as varioloid, and knowing

that all the waste of money and of danger and trouble for many towns need not have been, the board made, early in September, the following rules and regulations relating to the vaccination of lumbermen.

Section 1. No person shall work in or about any lumber camp or in any lumber crew in any part of the State who cannot show a good vaccination scar and who cannot prove by a certificate from a legally qualified physician that he has been vaccinated within three years.

Section 2. No lumber company, lumber operator, or agent of any lumber company or lumber operator shall hire any man to work in the lumber woods or in any lumber crew in any part of this State who cannot show by a good vaccination scar and prove by a certificate from a legally qualified physician that he has been vaccinated within three years, and all persons employing men for the purposes specified in this section shall make special enquiry when employing men whether they have or have not been so vaccinated.

While some of the lumbermen warmly commended the action of the board in making this order, others were dissatisfied with it. In view of the threatened movement on the part of some of them to urge its reconsideration, the following letter was sent from the office of the State board of health, October 8, 1903, to the secretaries of the local boards of health of the cities and a limited number of the larger towns:

I enclose a special order of the State board of health of which you undoubtedly know. This order was made after submitting the matter to the attorney-general. It was approved by the Governor and Council September 22. The reasons which influenced the board to make the order are these:

1. The active work which the State board carried on last winter to restrict and prevent the spread of smallpox has not ceased for a single day. In a quiet way, work has been carried on ever since in some parts of the State, particularly in the towns and plantations in the lower Madawaska region. In addition to the work which has been done directly by the State board of health, the United States Public Health and Marine Hospital Service has, at the request of the board, rendered efficient aid at Lowelltown, Jackman, St. Francis, Fort Kent, Upper Madawaska, and Van Buren. In spite of this work, the lack of efficient local co-operation and the importation of infection from the other side of the St. John river have made it impossible to fully stamp out the disease. Undoubtedly mild cases have occurred in many houses which have been concealed from the State board and the local boards. Nevertheless, one of the men

in the employ of the State board has disinfected forty or fifty houses in the vicinity of Van Buren within the last six or eight weeks and another man a little earlier disinfected twenty infected houses and families. From these towns, lumber operators have been hiring men and carrying them into the woods. Many men also, of course, come from the Provinces and the danger of infection from that source is considered serious. Furthermore, cases of smallpox have occurred in Bangor and some of the surrounding towns from which woodsmen come, and in some of these towns the earlier cases were not recognized as smallpox. Since the making of the special order one month ago, smallpox has been present in Van Buren, Grand Isle, Madawaska, Hamlin Plantation, Cyr Plantation, Wallagrass, Stockholm Plantation, Bangor, Old Town, Holden, Glenburn, Brewer, Orono, Belfast, Northwest Carry, Millinocket, Brownville, Greenville, Orland, Shirley, Blanchard, Hampden, Turner, Chesterville, Farmington, and Rockland.

2. Last year the danger in an imminent form did not exist until the latter part of October, and then only in a few places in Canada northwest of Jackman. This year the infection is present in many of our own towns and threatening from without as well. Last year smallpox was carried from lumber camps to many towns and the resulting cost was thousands of dollars. This year unless efficient measures are carried out, there is ample promise of much more serious trouble than we had last year.

3. The only trustworthy and efficient precautionary measure against the spread of smallpox in the lumber camps and from the lumber camps is vaccination. Ample experience in the past has convinced the board that the only way to bring about general vaccination of the lumbermen is to make it compulsory, and that these requirements shall rest upon the operators as well as upon the operatives, upon the men within our State and the many who are coming from without.

It was the opinion of the board that the safety of the interests of the lumbermen themselves requires just what is provided in this special order. Aside from that of the lumbermen, there are in the State various financial and other interests which in the opinion of the board are not in any degree inferior to those of the lumbermen and which can be protected only by the observance of this regulation.

This is a brief statement of the reasons for the order. Some of the lumbermen wish to have it set aside or annulled. The board would like the expression of the opinions of representative men of the State in regard to the advisability of this—opinions of those persons particularly who are in a position to judge of the needs of the financial and of the health interests of the State—and it would be glad to receive before Monday, October 12, letters or petitions touching this point.



Though the time was exceedingly short a large majority of the towns were heard from in good time, and they expressed in no uncertain tone their approval of the action of the State board of health and their belief in the need of the special order.

*The Vaccination of Operatives in Paper Mills.*—The beneficial results of the act of 1893, requiring the vaccination of operatives in paper mills in which rags are used, furnished an encouraging precedent for the regulation requiring the vaccination of lumbermen, through the present times, at least. Within the three years after the organization of the State board of health, three outbreaks of smallpox originated from paper mills which use rags. The act of 1889 was then passed and fifteen years have since elapsed and as yet not another outbreak from these places. In the meantime the number of these mills using rags has diminished, but there has probably been no diminution in the tonnage of rags used. All the available rags are used and of late years the chances of infected rags, and of the infection of unvaccinated persons who handle them, have vastly increased. The owners of the mills have cordially co-operated with the health authorities and there has been an honest compliance with the requirements of the law.

*Other Rules and Regulations.*—The difficulties encountered by our inspectors in the unsettled and forested regions of the State particularly with one or two of the bosses of camps in the Seven Islands region who did not show a willingness to co-operate with the inspectors, and in one instance even defied and temporarily thwarted the efforts to prevent the spread of smallpox among the men, suggested the need of two separate special orders which were subsequently, under the date of January 19, 1904, codified and again adopted by the board and were approved by the Governor and Council and published as the law provides.

#### SPECIAL ORDERS OF STATE BOARD OF HEALTH.

By virtue of the authority conferred upon the State board of health in Chapter 18, Section 8, Revised Statutes, 1903, the following rules and regulations are made.

Section 1. No person shall leave any camp, house, building, crew, or family in which smallpox or any disease resembling smallpox has appeared or has been present, and go to any other camp, house, building, crew, family, town, or township without the written permission of an inspector or agent of the State Board of Health or a local board of health.

Section 2. If smallpox or any disease resembling smallpox should appear or has recently been present in any camp or crew, the lumber company, lumber operator, boss, or agent who has charge of such camp or crew shall immediately notify the State Board of Health or any inspector of the State Board of Health, and no lumber company, lumber operator, boss, or agent in charge shall allow any person to leave his camp or crew or any such camp or crew over which he has charge without the written permission of an inspector or agent of the State Board of Health or of a local board of health.

Section 3. If, in disobedience of Section 1, any person should leave any camp, house, building, crew, or family and go to any other place, it shall be the duty of the lumber company, lumber operator, or boss or agent having charge of such camp or crew, to send as soon as is possible to the State Board of Health or any inspector of the State Board of Health the name of the person who has left, the place in which he usually resides and the place to which he has probably gone, if known.

Section 4. Whenever any member, inspector, or agent of the State Board of Health gives any orders relating to inspection, quarantine, disinfection, or anything else which he deems necessary to prevent the spread of the infection of smallpox or diphtheria, all persons receiving such orders verbally or otherwise shall obey them.

Section 5. When smallpox appears in any lumber camp, all lumber companies, lumber operators, or bosses and agents who have charge of such infected camp, or of other camps in the vicinity of such infected camp, shall give any member, inspector, or agent of the State Board of Health such assistance as he can, and when any said member, inspector, or agent is obstructed in the performance of his duty, he may call to his assistance any person or persons, and it shall be the duty of every person so called upon to render the required assistance.

*Note.*—Persons violating these rules and regulations will be liable to arrest in any place in the State of Maine in which they may be found, and, as the law provides, they "shall be punished by a fine of not more than \$500, or by imprisonment in the county jail for a period of not more than six months, or by both fine and imprisonment."

By order of

STATE BOARD OF HEALTH.

*Inspectors for the Board.*—For some years the State board of health has had an arrangement with physicians at various exposed points on our border to take prompt action in case smallpox or the danger of smallpox infection should appear in the region around them. Their written instructions have been as follows:

If smallpox should be introduced into the region around you, or if you have reason to believe that persons who have been exposed to smallpox are in any of the towns or plantations surrounding you, you are authorized to take prompt action as follows:

1. Investigate the facts and help local boards of health to trace out and vaccinate all persons who have been exposed to the infection of smallpox, and act as the medical advisor of local boards, to whom medical advice is otherwise not quickly available, in accordance with the suggestions in Circular No. 71.
2. Report to this board as promptly as possible the facts learned by you and the action taken by you or local boards.
3. It is to be understood that the State board of health will become responsible to you only for your services as the agent, or medical inspector of this board. The board will not pay you for services to patients, nor assume bills for towns or plantations. In outbreaks of smallpox, as in outbreaks of other infectious diseases, it is the duty of each local board of health to act promptly to protect its town from danger. It is in no way the policy of the State board to usurp the authority of the local boards or to take their own work off their hands. It is simply the wish of the State board to aid local boards in emergencies, and it is the duty of the State board to insist that local boards act promptly as the law requires in emergencies.

These brief instructions have been supplemented by those which are found in the printed circulars of the State board of health and in most cases by personal consultations and explanations. It has been sought to make it clear to these inspectors that all towns and organized plantations must be required to do their own work as the law requires and at the expense of their own municipalities. No inspector or agent of the board has ever been authorized to lead local boards of health to believe otherwise, though the medical inspectors stationed in the middle Madawaska region remote from physicians have the past two winters made themselves useful in helping to vaccinate the people, the towns furnishing the vaccine virus, and in working in co-operation with the local boards of health to assure efficient and trustworthy work.

In managing outbreaks of smallpox in lumber camps the policy has been to get to the infected camp with the least possible delay, to remove the sick from the main camp and to require their isolation in a small special camp, to vaccinate all of the other men of the exposed crews, to disinfect the infected camp, and finally after the full recovery of the sick, to give him a disin-



fecting bath and to disinfect as thoroughly as possible all infected things and places. Further instructions in regard to their action in camps have been :

In the woods it has not been customary for our inspectors to quarantine any members of the crew who have been exposed, but merely to keep them under observation if that is practicable, or to make arrangements to have them kept under observation, and to have all persons with suspicious symptoms removed promptly.

The State board of health wishes its inspectors to use their utmost effort to have the men stay and work for the operators. That is the best thing for them, for the operators, and for their friends and families if they have friends and families.

In bringing the men around to vaccination, of course, use persuasion so far as that will go. Of course, explain to them as you may very truthfully that vaccination with the vaccine which is now used is followed with but very few sore arms or arms that are seriously sore. There has certainly been a great improvement in the vaccine within a few years. That is shown by the report of the bacteriological counts of the extraneous germs in the vaccine bought in the open market by the surgeon-general of the Public Health and Marine Hospital Service, who is now, under the authority provided in a congressional act, making systematic inspections of all vaccine establishments and their products, and it is further shown by the small percentage of sore arms following vaccination during the past year or so. Our inspectors have reported to me that not more than two per cent. of the many hundred who were vaccinated in the northern woods last winter were obliged to lay off a single day on account of sore arms.

For the disinfection of camps you can spray down all surfaces—walls and floor particularly—with solution 7 preferably putting in about half a pint of formaldehyde to a gallon of water. Then you can hang up blankets and sprinkle them or spray them with the strong or forty per cent. solution of formaldehyde. In this way you should use as much as ten ounces formaldehyde per 1,000 cubic feet of space. It would be better to disinfect the camps quite early in the morning so that you can keep them closed up, preferably as long as six or eight hours, and then have time to air them out well before the men return at night.

You can disinfect clothing or bedding by packing in any kind of a tight box or other practically tight enclosed space, and sprinkling with formaldehyde.

Woolen clothing, particularly those sprinkled, must have quite a long period of airing before it may be used by the men.

You will need a good supply of bichloride tablets to use for the disinfection of the men, particularly of convalescents, after

the period of desquamation is completed. For the disinfection of the hair and beard of the men have them wash their heads and beard in bichloride solution made with one tablet to the pint. For the disinfection of the whole body one tablet to three pints is about as strong as should be used.

While disinfecting the clothing the men must necessarily be kept under blankets or otherwise kept comfortable, and after the clothing has been aired out, they must take a disinfecting bath, scrubbing the whole body with bichloride solution, and preferably more than once. Clean or disinfected clothing should be given to them to put on when they are through with their last disinfecting bath. This work should be done very thoroughly, even if under disadvantageous circumstances, else they will endanger the public when they are allowed to come down.

Other expedients for the disinfection of clothing are: Put the clothing into a blanket, or much better into a rubber blanket, sprinkle it thoroughly with formaldehyde solution and wrap it up tightly, keeping it thus wrapped up tightly for five or six hours at least.

If you had a tub or anything else to do it with, you could make a few gallons of bichloride solution about 1-1000, or eight or ten tablets to the gallon of water and soak the clothing in it for two hours, at least. Then rinse in water. It would be better to have the solution hot, or at least, quite warm when you put the clothing in. It will take no longer to dry the clothing than to get the formaldehyde out of it, nor so long.

In carrying out this work in the woods it was not always possible to do it as promptly as was desirable. With eight or more men employed as inspectors, and nurses, in the fall and winter of 1903 for instance, in the Lowelltown, Jackman, Madawaska, Katahdin, and other regions, it was not always possible to have a man immediately available for a new outbreak, and more frequently it happened that men could not stay in a given camp as long as was desirable. From one camp in which unvaccinated men from the infected Madawaska region had been hired, there was the complaint that it was a week after word was sent out before help came in, but no man was available and there was more than a two days' journey each way between the camp and the nearest railway station. Smallpox work is done at a disadvantage when, with a slow team, a journey of forty miles has to be made to civilization, then seventy into the woods again, and successively thus to go back and forth between camps as new cases occur or the need of disinfecting and releasing from quarantine requires.

In some of these long distance camps, recurring cases of smallpox dragged along over weeks of time and caused the operators large losses. In camps of vaccinated men, this could not occur. Some of these operators had hired unvaccinated men thinking to have them vaccinated after they were in camp. Some of them found that, after the men were together in camp, they would not be vaccinated, even in the presence of smallpox. The experience of the board indicates that men are much more likely to stand out against vaccination in camp than they are before they have hired. Even among the French Canadians at our inspection stations up on the line, not a man has refused vaccination or turned back and given up his chance to get a job because vaccination has been required.

*Inspection Stations.*—For the past two lumber seasons, inspection stations have been maintained in Sandy Bay Township, on the old Canada road above Jackman, and at Lowelltown, the first station on the C. P. Railway coming into the State from the west. At Sandy Bay, arrangements were made with the hotel keeper to use his hotel as an inspection station. Men coming from Canada seeking work in the woods were put to bed, their clothing and bundles were disinfected, they took a bichloride bath, were re-clothed in their disinfected suits, they were vaccinated, and a certificate was given them showing what had been done for them. At Lowelltown, a small building was built in the fall of 1903 to serve as a disinfection station and for the lodgment of the men while their clothing was undergoing disinfection. Most of the men came through on the night train. They were required to stay over until the morning train, and meanwhile they were lodged comfortably, packed in bunks not very commodious but comfortable in a long narrow room with a stove in one end to keep them comfortable. They were provided with overalls, jackets, and blankets. Before getting into them, they were required to take a disinfecting bath at the sink at the farther end of the room. Their clothing was carried out and around to the end of the camp opposite to that in which the entrance was found. Here, there was a disinfecting cabinet or closet with an entrance from the outside in which the clothing was hung up on hooks, or otherwise. The Novy formaldehyde generator was operated from the interior of the camp, and with

it the small air-tight enclosed space in which the clothing was exposed was heavily charged with formaldehyde. In the morning, the clothing was returned to the men, they were vaccinated, and went on to Jackman or to the other points of destination arriving in the day time instead of a little past midnight.

Of the hundreds of men that have come through these two stations in the past two years, not one has developed smallpox after he has arrived in camp, nor has there been a history of the importation of infection into any camp by these men. While they have undoubtedly regarded the arrangement as an inconvenience, it has been the wish of the State board to make it as little obnoxious to them as possible.

*Disinfection in Camps.*—The efficient and trustworthy disinfection of lumber camps and of the infected articles in them is manifestly a difficult job. Such work is done under many disadvantages, and at the beginning of the work, it was regarded as doubtful whether a camp could be considered disinfected in a trustworthy manner even after our experienced disinfectors had done their work as thoroughly as possible under the circumstances. It may be recalled that in the winter of 1902-3, there were many camps in the Jackman region in which cases of smallpox occurred, that in the Seven Islands region smallpox had existed some time before that fact was known by the board, and that our inspector when he had arrived, found fifty-eight cases on his hands. In the Fish river region, many lumber camps were badly infected. All of these camps were disinfected, and disinfected as well as could be done under the circumstances; but as many of these camps and the camp bedding remained to be used the next season, the next season was looked forward to with much misgiving as regards these regions. But in neither of these extensively infected regions did a single case of smallpox occur in the winter of 1903-4 so far as is known to the board. That would seem to indicate that the disinfection was more efficient than it was thought possible that it could be, or else it argues a feeble degree of vitality in the infection of smallpox. It is known, however, that under favorable conditions smallpox infection retains its vitality and virulence for a long time.

*Aid From Public Health and Marine Hospital Service.*—Several times it has been necessary to call upon the surgeon-general



of the Public Health and Marine Hospital Service at Washington to aid the board in the inspection service upon our boundary lines. A part of the time during the last two seasons the surgeon-general has borne the cost of the inspection station at Lowelltown and at Van Buren. In the spring of 1903, he took over the inspection station on the old Canada road, and after the transmission of the following letter which bore the date of February 10, 1903, he put an inspection station on at Glazier lake in co-operation with the authorities of the Province of New Brunswick.

This office is forced to appeal to you for aid in preventing the wholesale infection of the northern part of the State of Maine with smallpox. The trouble comes from the importation of smallpox from the border parishes of the Province of Quebec into lumber camps in the northern part of our State. There has, for some time, been an extensive prevalence of that disease in the Province of Quebec from Megantic to Riviere du Loup, at least. It has lately been reported to this office that there are one hundred cases of smallpox at Riviere du Loup.

Since last fall, the State board of health has been making a strenuous effort to exclude smallpox infection from this State and has kept medical inspectors in the field continuously vaccinating and disinfecting men who have been coming over to work in the lumber regions of our State. We have also at Jackman, on the Canadian Pacific Railway, had a permanent smallpox hospital to which we have brought out all the cases of smallpox in that region so far as it is possible to bring them.

The policy pursued by our inspectors under the instructions of the State board of health has been to get to an infected camp and as quickly as possible to remove and isolate all cases of smallpox, to vaccinate as promptly as possible all other members of the crew, to disinfect the camp so far as that has been practicable in such places, and to care for and to finally disinfect and release from quarantine, cases of smallpox. The result of this work is that in each infected camp in the Jackman region there have been but very few cases, in most of the camps only one; in one camp, four. On the headwaters of the St. John river, however, the result has not been so favorable for the reason that, when we first learned of the presence of smallpox there and had sent our chief inspector there as quickly as possible, he found a total at that time of fifty-eight cases of smallpox in the various camps. We have now for more than a month kept a physician there with an assistant who has been vaccinating the men so far as is possible, quarantining when that appears practicable and desirable, and restraining the movements of the men from camp to camp. Referring to the piece of a map which



I herewith enclose, I would say that the larger proportion of the men on the headwaters of the main St. John, and particularly in the region between Seven Islands and the boundary line, are men who belong in the Province of Quebec; but some of the men belong down the river in the northern part of the State of Maine, or in the Madawaska settlements—that region on both sides of the St. John river from Connors and St. Francis to Van Buren and St. Leonards.

The men in the Seven Islands region of the St. John can come home either across on the tote-road to the Allagash, thence down the Allagash to St. Francis Plantation and Connors, or they can drive across to St. Jean Port Joli and come home by the way of the Intercolonial and Temiscouata Railways. There are many hundred men at work on the upper St. John. As yet I have not learned that there have been any cases on the Allagash.

Our board did plan to put an inspection service at the mouth of the Allagash or at some other point where we could inspect all of the men who come down the river, vaccinate them, disinfect their clothing, and keep in quarantine all cases of smallpox which have not fully recovered and cleaned off; but if we do this, they will come home by the way of the two railroads through the Province of Quebec to which I have referred. The only way, therefore, in which the situation can be controlled, will be by gaining the co-operation of the Provincial board of health of New Brunswick, put an inspection and quarantine station on at some point on the Temiscouata Railroad between the boundary line of the Province of Quebec and the Province of New Brunswick and Edmundston. I have now sent the chief inspector of this board, Dr. Estes Nichols, to Fredericton to talk with the secretary of the Provincial board of health about this matter.

Aside from the danger from the upper St. John waters, smallpox has, for some time, been in the lumber camps up the St. Francis on both sides of the line. A large part of the men in these crews belong in the northern part of the State of Maine and the parishes of New Brunswick along the St. John river. The red lines down the St. Francis show the course taken by the tote-roads which come down from those camps. There is one point at the head of Glazier lake at which an inspection service could control all of the men coming down the St. Francis river and along the St. Francis lake. They could also be controlled at that point where they leave the lake to come down on the Provincial side of the St. Francis to Connors, the terminal station on that branch of the Temiscouata Railroad. You will notice that if an inspection station is put on, either on the American side at the head of Glazier Lake, or on the Provincial side at the foot of it, the men on the headwaters of the St. Francis would come over across on a road which leads to that part of the Temiscouata Railroad running from Edmundston to Riviere du Loup.

The Provincial board of New Brunswick has incurred heavy expenses in the past year and a half in fighting smallpox. The expenses of the State board of health of this State are far in advance of the appropriation which was at its disposal. We are, therefore, under the necessity of appealing to you for help. Dr. Nichols has been instructed to propose that if the Provincial board of health will immediately put an inspection service on the Temiscouata Railroad coming from Riviere du Loup over to Edmundston, and will also put on an inspection service at the foot of Glazier lake, that this board will make a proper presentation of the situation to your office, hoping that you may deem it right to agree to pay half of the expense of the inspection service at both of these points. A similar division of the expenses of an inspection service between Edmundston and Riviere du Loup was made in 1885, the United States Government then paying one-half of the cost.

On the part of the State board of health, it plans if we can thus gain your co-operation, to place a guard on the tote-road from Seven Islands over to the Allagash to prevent infectious persons coming across to the Allagash, thence down the river, thus forcing them to come home by the way of the Intercolonial and Temiscouata Railways. Aside from this, our State board of health has its hands full in taking care of smallpox up and down the Bangor & Aroostook Railway from Masardis to Fort Kent. Many lumber camps are infected along the line of that road. The infection was derived from the towns west of Caribou and Presque Isle in which, only a short time ago, it was learned that smallpox has for some time existed, but was unrecognized as such.

The local boards of health in those towns are rapidly cleaning up all infected houses under the supervision of the inspectors of the State board of health. Finally, I appeal to you to let me know with the least possible delay what you can do. There is but little, if any, time to spare. The lumber camps will very soon be discharging men and sending them home having now, in most of the crews, nearly finished yarding after which not so many men will be required.

*The Prevailing Type of Smallpox.*—A large percentage of the cases of smallpox have been mild, and many of them very mild indeed. Interspersed with these mild cases there have in many towns and camps been a considerable number of moderately severe cases and some very severe or fatal cases. The mortality upon the whole has been slight. Under the conditions which prevailed in many towns and lumber regions, it is impossible to make an accurate statement of the number of cases which have occurred; but, making as close an estimate as is possible, I

would say that the returns from the various places indicate a total of 2,318 cases for the two years 1902 and 1903. In 1902, there were 222 cases with 12 deaths, thus giving a case mortality rate of a little over 5 per cent. In 1903, there were about 2,096 cases of smallpox with 9 deaths, which was a death-rate of less than one-half of one per cent. There were, however, reports of a few deaths of young children the cause of which was suspected to be smallpox.

This mild form of the disease has tended to a multiplication of the number of cases. In some classes of our population the absence of fatal cases has bred indifference to the danger of the spread of infection. Fully as great a factor in the distribution of the disease has been the difficulty which many physicians have had in making a diagnosis. Fortunately, outbreaks of smallpox had been of rare occurrence in Maine. Unfortunately, but few of our physicians had ever had any or much practical experience with smallpox, and the medical text-books almost invariably give correct and satisfactory descriptions of perfectly typical cases of smallpox only, though cases and outbreaks of smallpox of a mild type are not a new phase of the disease. It has happened that in many towns the first cases have been very mild and somewhat atypical, though more severe and typical cases have occurred later. The result has been that some of our most accomplished physicians have erred in calling some of these early cases chickenpox. As a further result, outbreaks of smallpox have gained a disastrous start before the true nature of the outbreaks have been reported to the local boards.

*The Proper Policy.*—The only right and rational policy for our State, for both the local and the central authorities, is promptly and efficiently to stamp out every outbreak, and every person who is worthy of being a citizen of the State, should understand this.

To guard against the spread of infectious diseases is the duty of the citizen, the town, and the State. The town, for instance, which fails promptly to restrict the movements of smallpox cases within its boundary endangers the citizens of other towns. It has been necessary for the State board of health to force upon the consciences of some persons and a few towns and plantations the truth that if they elect to have smallpox, other individuals

and places will not consent to have smallpox, and through the fault of others may be forced to spend thousands of dollars in fighting the disease. The law recognizes no right in a town to have smallpox. As a business policy, any other course than to stamp out promptly every outbreak which may occur would be little short of suicidal. Our State is looked upon as one of the leading playgrounds for the nation. With vacationists and sportsmen estimates have come from trustworthy sources that the State does a business annually amounting to \$10,000,000 or more. It is safe to say that if our State should earn the reputation of harboring smallpox or other epidemic diseases, some of these millions would be lost to us and we should deserve the loss. The policy of the State board and with few exceptions that of the local boards has been to stamp out outbreaks of smallpox as quickly as possible, and how speedily serious outbreaks can be mastered even under disadvantageous conditions, has been a revelation to some dubious minds.



## REPORTS ON SMALLPOX IN VARIOUS PLACES.

## ASHLAND REGION.

In the middle of July, 1902, Dr. Dobson of Ashland was called to Nashville Plantation to see one of the Italians working in one of the crews at work grading the roadbed for the extension of the Bangor and Aroostook road to Fort Kent. The man had a rather indistinct scar of a vaccination made two years and a half before, had been slightly ill two or three days before the eruption appeared. The doctor's report indicated the possibility of an atypical case of varioloid. With the co-operation of the company the man was taken care of by Dr. Dobson and he and his belongings were disinfected in due time.

In a letter from Dr. Dobson January 3, 1903, referring to the smallpox situation in Presque Isle and some of the surrounding towns, he said, "We are trying to be ready for a few cases, for I have no doubt that the disease will reach us before long." The report of Dr. Nichols on the Seven Islands outbreak had just been received. Ashland was warned to be on the watch against the danger of persons coming across to the Allagash and through on the old tote road which comes out not far from Ashland. It was subsequently learned by means of enquiries made at either end of the line that but little danger need be apprehended from that direction, but that there were abundant sources of infection in camps much less distant. January 8, Dr. Dobson was requested "to trace out as well as you can every rumor of smallpox in camps or elsewhere in your surrounding country and we will get to them as speedily as possible. We do not propose to do the work for the local boards of health, but the State board wishes to give prompt first aid to every town which needs it."

As a preliminary to smallpox work in this region which appeared to be imminent Drs. Nichols and Dobson met and conferred. January 12, he telegraphed report of a case of small-

pox in Masardis, and on the 15th, he reported a case of smallpox which had come from Anderson's camp in the Fish river region to Ashland. The doctor investigated and reported as follows:

January 16 and 17 I visited Anderson's camps where the above three cases had been working and found 15 cases in all stages. Probably 5 or 6 had gotten entirely well. The disease came from Washburn. There are four camps quite near one another here and the four camps are badly infected. Since then, 5 new cases have developed. At present the men are content to remain there, but soon will become restless, I expect, and a better guard will become necessary. The most of the laborers are from Washburn and Caribou.

Oxbow, Masardis, Ashland, Garfield, and Portage Lake are quite well vaccinated. At Robinson's Mills at Portage Lake, I think the proprietors do not estimate properly the value of vaccination for very few are vaccinated.

Is the time not opportune to have a law passed requiring all employees in mills, lumber camps, etc., to show a certificate of recent successful vaccination?

While I know that smallpox will not be stamped out of Aroostook county this year, I feel that you have the situation well in hand, can put your finger on every infected place. There should be a few more physicians in this part of the county devoting their entire time to the epidemic.

The following illustrates how much mischief may be done by a few persons who don't care, and may at the same time stand as the record of the beginning of an outbreak of smallpox which troubled Ashland for some time in spite of the faithful work of Dr. Dobson, inspector for the State board and of Dr. Chapman, secretary of the local board.

June 10. Some time last spring one Philip Depere a native of our recently annexed Sheridan Plantation had smallpox at Wallagrass. He was not attended by a physician, and came down here and visited his uncle who occupies one of two houses opposite the Ashland Manufacturing Company's mill plant. Alex Depere went on the drive, felt sick and came home and had some eruptive disease. So did his wife, another nephew and a child stopping there. At his neighbor's house, five had this same disease. The above Philip Depere also visited on the old Presque Isle road, five miles from here, at one Hillett, and last Friday David Hillett went to Portage Lake, stopped all night in a camp of 28 men, and returned to Ashland where he was found with smallpox eruption six or seven days old. Sunday, acting in the interest of the State board, I went to the Portage Lake camp, vaccinated all I could and quarantined them.

Yesterday, we heard there were several cases of smallpox at the mill, and discovered four cases, and one convalesced case in one house.

To make a long story short we now have at least 19 cases variola in 6 houses and 12 houses quarantined. The Wallagrass case is the parent case. Several of these cases show lesions superficial with some six and some one day old. There are papules alongside of pustules. The initial symptoms have been severe in several cases.

A few days later he found two houses on the Castle Hill road, one in Ashland and one in Castle Hill both infected by this same Depere.

#### ATHENS REGION.

While in Skowhegan November 3, 1903, in response to a call from the local board of health, it was learned that there were cases probably of smallpox in the town of Athens twelve miles north. Dr. Merrill of Skowhegan kindly offering to drive me up there, accompanied me. It was learned that the disease had existed there some time and that many persons had had it. As it was necessary to return late in the evening by another road to investigate rumors about infection in the intervening town of Cornville, only three cases were hunted up and examined and these were ample to establish the fact that smallpox was present. The following notes, relating to the first three cases, were made:

*Case 1.*—A woman 34 years of age. Became ill October 25 and for three days was feverish and had headache and backache, though the last symptom had troubled her for some time before. The eruption appeared on the 28th as red spots, subsequently followed by papules and vesicles. The vesicles then averaged 1-8 of an inch in diameter, regularly circular in outline with indurated bases and areole distinctly forming. When seen, the distribution was general though somewhat sparse, including the palms and the soles. Upon the appearance of the eruption, there was a decided amelioration in the condition of the patient. There were no indications of successive crops upon the same area, nor of the early drying and flattening of vesicles, and no large or irregular lesions. The patient had never been vaccinated, but had previously had chickenpox. The diagnosis was unequivocally smallpox.

*Case 2.*—A woman about 65 years of age. She had never been vaccinated. Illness began October 16. Before the eruption appeared, she had a temperature of 104, headache, slight backache, and a chill. The eruption appeared according to her testimony on the 20th. The distribution was general and, though thickly covering the body, had been discrete. There was a decided improvement in the general condition and the feelings of the patient upon the first appearance of the eruption. When seen, the eruption was in the period of desquamation. A part of the crusts had fallen. The crusts which remained were thick, firm, and typically those of smallpox averaging about  $\frac{1}{4}$  of an inch in diameter or more, and covering the palms of the hands and soles of the feet as well as all other parts of the surface. This patient had just come from some of the stores in the village where she had been shopping. The appearance of the lesions and the clinical history as obtained from the patient were typical of smallpox, and there was no hesitation in pronouncing the case to be one of smallpox.

*Case 3.*—A young man who had never been vaccinated and had previously had chickenpox. He was fully recovered and the period of desquamation was nearly complete. The eruption had been very sparse. When attacked, he gave a history of feverishness, of headache, and of chilliness, and thought that the eruption came out two days after he was taken sick though he was uncertain as regards this point. In this case as the eruption had been so slight and the condition of the skin had so nearly recovered its normal condition, a positive diagnosis was out of the question; but I had no hesitation in saying that in my judgment the case had been one of mild smallpox.

As the first two cases were plain and typical, a prompt and positive diagnosis of smallpox was made and the local board of health was urged to get to work immediately to suppress the epidemic.

Both of the local physicians accompanied me to the first house. The diagnosis had been passed out before I left the room and one doctor had disappeared. Dr. Ellingwood remained and in all the subsequent history of this outbreak acknowledged the correctness of the diagnosis and used his



influence in favor of a prompt and rational policy on the part of the local authorities.

Before leaving that night it was evident that there would be a disposition to doubt the correctness of the diagnosis. The conversation with the husband of one of the patients culminated in the remark: "If you question the correctness of the diagnosis you undoubtedly have the right to call any other physician you may choose, but if you send for one I should advise you to get one who has had an ample and somewhat recent experience with smallpox."

Four days later a letter was received from Dr. M. W. Bessey, of Waterville, who in 1899 had charge of the epidemic of smallpox in Winslow, in which he wrote: "Last Wednesday (November 4th) I received a telephone call from Athens. I went up, and found that they were in the midst of an eruptive epidemic. After I had seen a number of the cases, and pronounced them to be mild cases of smallpox, I then learned that you had seen them previously. Now it seems to me that it is rather a bad condition of affairs there. The local board of health are beset on every hand by the public, headed by Dr. ———, (who declares that there is no smallpox about it) and hardly know what to do. I saw several students in the school, which was in progress, in the contagious stage of the disease. Now I think that the interests of the public health, not only of Athens, but of surrounding towns demand that the proper thing be done there and at once."

A letter of caution had already been sent to the neighboring towns which were endangered. Frequently recurring calls to go to other towns made it necessary to defer the second visit to Athens, which was apparently badly needed. Meanwhile the constituted authorities in Athens were apparently still trying to find out what they had as is shown by the following letter which was sent to Bangor and which the secretary of the local board of health of that city asked me to answer:

Gents: I take the liberty to write you relative to the disease which prevails in your place which the doctors *call* smallpox.

We are afflicted in this small town with what I think is the same disease and we are in a fierce discussion as to whether it is smallpox.

The doctors disagree and the disease here is so different from what we have been taught and learned about smallpox, that

nine-tenths of our people don't believe it is smallpox; therefore, it is hard to keep anybody quarantined, and Dr. Young has created such a scare that it has ruined our business in town. Now as you have had more experience with the disease than we have, I write you for information. Is the disease a settled question or a matter of dispute with you? And are you taking any measures to ascertain what it is, and if so, what measures? Please answer and charge me for your trouble and I will remit. Children have the disease without noticing, only two or three men have had it, and they were not confined to the house and kept about their business after two or three days, and women are sick only two or three days. Each case is accompanied with a little breaking out; only two cases where the breaking out has been to any great extent. Dr. Young of Augusta said he did not know what it was but he should *call* it smallpox. Dr. Bessey of Waterville said it was not the old-fashioned smallpox, but he should have to class it as smallpox.

Thus far the only harm done has been by the doctors who have produced such a scare that it has ruined our business.

I realize that you have a good deal to attend to without being bothered by me, but please write me and charge me what you will and I will pay it.

Yours truly,

J. F. HOLMAN.  
*Chr. of Selectmen, Athens.*

The following answer to this letter was sent:

AUGUSTA, MAINE, November 11, 1903.

*Mr. J. F. Holman, Chairman Board of Selectmen, Athens, Me.:*

DEAR SIR:—Your letter of November 9 has been forwarded to this office from Bangor with the request that I answer it.

Answering it I would say that when I was there in your village I said plainly that the two cases of smallpox, one at the ——— house and the other at the ——— house, were good plain cases of smallpox and nothing else. One other case I said was, in my opinion, an exceedingly mild case of smallpox. It was far advanced on the road to recovery, and the stage of desquamation or peeling was well advanced. The disease which you have is the same as that which they have in Bangor and the surrounding towns. I have been called to many of these cases and have made a personal examination of them. It is the same as I have found in many parts of the State, a mild form of smallpox interspersed here and there with a severe case.

I intended to get to your town again before this, but I have been on the road so constantly looking after smallpox in other places that it has been impossible for me to do so. At a special meeting of the State board of health yesterday it was voted to quarantine your town, and it will be done unless you settle down

to the fact that you have smallpox, and get to work in an efficient manner for clearing up the disease. I was hoping to get as far as Skowhegan tonight and then up to your town tomorrow. I shall come tomorrow if possible and bring a man with me and insist that you free your town from infection as soon as possible. Your letter misrepresents what I said. I said that the disease in your town was smallpox. A letter which I have received from Dr. Bessey states that he found smallpox. You say that the scare which the doctors have produced is ruining your business. I shall deem it fortunate if we can scare you enough so that you can realize the true situation and get down to efficient work.

Yours truly,

A. G. YOUNG, *Secretary.*

The second visit to Athens was made November 12. From the buggy upon the street an earnest conference began which was adjourned to the office of Mr. Holman and there continued two hours. Nine days since the first visit had passed, and not a stroke of work had been done save the closure of some of the schools—no arrangement by the local board for vaccination, or isolation or disinfection. Everybody, whether infected or from infectious houses, was running around loose. Even while we talked Mr. H——, the husband of one of the women whom I had seen with smallpox at the first visit came into the office, and he had in his infectious condition continued to work as a clerk in the store of the secretary of the local board of health. Mr. Holman declared that "we do not recognize that we have smallpox." The answer was that, "then the State board has no guaranty whatever that you will do any kind of decent or effective work for ridding your town of infection or for the protection of other towns."

The letter to Mr. Holman of the day before had not been received. A copy of the special order of quarantine made at a special meeting of the State board of health on the 10th, and which had been submitted to the attorney-general was produced. Before the end of the conversation, it seemed that a sufficient guarantee had been received that work would be done, to justify the omission of the service of copies of the quarantine upon the officers of the town, and in putting it into effect.

In this connection it may be said that in the opinion of the State board this power of quarantine should rarely and need

rarely be exercised. In its eighteen years work, this was the first instance in which a quarantine was felt to be justifiable. Hitherto the sole activity of the State board as regards the quarantine of towns had been to discourage all thought of quarantine of town against town in times of local panic. The quarantine of a whole town is a harsh measure punishing the innocent as well as the guilty. In this particular town there were many persons who were wholly dissatisfied with the do-nothing policy of the local officers.

Before the close of this visit it was understood that work should begin immediately. Though the disease had been in their town some time, the board was told that epidemics of smallpox fully as serious had been stamped out in the Madawaska region promptly and permanently under conditions much more disadvantageous than should be found in Athens.

On the part of the State board of health a man trained to such work was to be there the next day to show them how to do the work of disinfection and to work for them a day or two at no cost to the town. The man sent was Mr. P. E. Torrey of Wilton. He was furthermore under instructions to render aid to other towns in which cases of smallpox had already occurred, to investigate rumors of cases or outbreaks of smallpox in Athens or the neighboring towns when that appeared to be necessary, and to keep the office of the State board informed in regard to events in that region. To save wasting more time a supply of formaldehyde and a formaldehyde generator had already been ordered forwarded to Skowhegan.

The following letter was sent to the secretaries of the local boards of health of all of the contiguous towns:

November 14. I was up to Athens November 3 and stated plainly to everybody there whom I talked with that they had typical cases of smallpox and that there should be no question in regard to the nature of the disease. I find that what I said has been badly misrepresented. On account of the policy of doubt and denial which has nevertheless prevailed, that town has been endangering other towns. I was up there again on the 12th, however, and I feel very sure that the local board of Athens will now take hold of the work in earnest and clean up the town and make it, in a short time, cease to be a menace to other towns. They have a man at work disinfecting whom I sent up last night.

(Signed)

A. G. YOUNG, *Secretary*.



It must be admitted that the State board of health was disappointed in the work which was subsequently done as it had already been at the want of work.

November 22, Mr. Torrey telephoned that new cases of smallpox were appearing, that the local board of health had made no arrangements for public vaccination, and that infectious persons were still running at large. Letters and telephone messages were coming from other towns and from some of the best citizens of Athens expressing dissatisfaction with the course of the town officials. Meanwhile epidemic calls in many directions rendered it impossible to give Athens all the attention she deserved.

December 3 a third trip was made to Athens. As before the talk had been with the town officials, it seemed this time that the other persons who had written or telephoned to the office should have a hearing. Therefore from one to six o'clock statements were heard and recorded, and from seven to ten in the evening a meeting was held with the municipal officers and local board and some of the citizens.

From this time on for some time the local board did its work with no "obnoxious espionage" from the State board of health. December 24, Mr. E. M. Henderson of Hallowell, who had before done efficient work for the State board of health, and who had had ample experience in smallpox work was sent to Athens on account of continued reports that that town and Brighton Plantation were still endangering other towns. Smallpox had sometime before broken out in "Happy Hollow," a pauper colony in West Athens, many of the inhabitants of which, while within the jurisdiction of the local board of health of Athens, had a legal settlement in other towns. While this colony had alternately been quarantined nominally and not quarantined, no efficient work had been done to keep the disease from spreading among these people nor from extending to other towns. The local physician who maintained that smallpox did not exist in Athens had lately been employed by the local board here and elsewhere. In his first letter, Mr. Henderson reported:

I went to West Athens where Dr. ——— had pronounced them all right, and had disinfected the houses and let them out, and in one house I found two children who I think were both unsafe, and one which I knew was, as there were sores on it,

and especially in the palms of its hands where the sores were typical.

December 31, Mr. Henderson telephoned that the local board of health of Athens had resigned. Thereupon as promptly as was practicable the following special order was made by the State board of health and copies were duly served upon the municipal officers and persons who might or might not legally be members of the local board of health.

January, 1904.

SPECIAL ORDERS OF THE STATE BOARD OF HEALTH RELATING TO THE MANAGEMENT AND PREVENTION OF SMALLPOX IN THE TOWN OF ATHENS.

*Rules for the Local Board of Health and Municipal Officers.*

Section 1. The local board of health of the town of Athens and the municipal officers of that town are hereby ordered to carry out the following rules and regulations made by the State board of health for the purpose of preventing the further spread of smallpox.

Section 2. If the local board of health, or the municipal officers receive a report or hear a rumor that any person in the town of Athens is affected with smallpox, or that he or his clothing are in an infectious condition, they shall investigate the matter at once.

Section 3. Every person affected with smallpox or who is in an infectious condition, and every infectious house and thing shall be promptly quarantined and isolated. The isolation shall be safe and efficient so that infectious persons or things shall not go or be transported to other houses or places, and so that other persons shall not go into infectious houses or places nor come near or in contact with infectious persons or things. Agents or inspectors of the State board of health and the necessary attending physicians, nurses, and attendants shall, however, be allowed to visit and care for the sick, *provided* that no person, who as nurse or in any other capacity fails, in the judgment of any member or agent of the State board of health, to take the necessary precautions against carrying infection, shall be employed or allowed to go near infectious persons.

Section 4. When in the opinion of any member or agent of the State board of health it is deemed necessary for the safety of other persons to do so, guards shall be placed over infectious persons or houses and in such a manner as said member or agent of the State board of health may require.

Section 5. No person with smallpox or who has recently had smallpox, and no person, thing, or building infected with



smallpox infection shall be released from quarantine until disinfection is done by such processes and in such a manner as may be satisfactory to any member or duly authorized agent of the State board of health; and no person who has had smallpox shall receive his final disinfection and be released from quarantine until the last trace of desquamation and the finer exfoliation from the sites of the scabs have disappeared.

Section 6. When smallpox appears in a family, the local board of health and municipal officers of said town shall arrange for the free vaccination of all the persons in the family or the neighborhood as quickly as possible, particularly all exposed persons. The local board of health and municipal officers shall also make prompt arrangements for the proper care of all persons who may be affected with smallpox or whose clothing may be infected.

Section 7. The general management of outbreaks of smallpox and of exposed, infected, or infectious persons and things shall be as is advised in Circular No. 71 of the State board of health, so far as the directions given in said circular are not inconsistent with the foregoing rules, and so far as they may not conflict with any advice or request which may be given or made by any member or agent of the State board of health.

*Rules for Citizens and Residents of the Town of Athens.*

Section 8. Any person who knows or has reason to believe that he has been exposed to smallpox or to smallpox infection, and any person who has smallpox shall, without delay, give notice thereof to the local board of health of the town of Athens and in case there is no local board of health, to the chairman of the board of municipal officers.

Section 9. Whenever any householder knows or has reason to believe that any person within his family or household has smallpox, he shall immediately give notice thereof to the local board of health, and in case there is no local board of health, to the chairman of the board of municipal officers.

Section 10. No person affected with smallpox, or any disease of which there is good reason to believe that it may be smallpox, shall leave the house, building, family, place, or town where he may be and go to any other house, building, family, place, or town without the permission of an inspector or agent of the State board of health.

Section 11. No person affected with smallpox, varioloid, or any disease of which he has good reason to believe that it may be smallpox, shall go to school or to church or in any way mingle with the general public until the smallpox spots have all smoothed off and he and his clothing and the house where he is have been disinfected in accordance with the rules of the State

board of health and to the satisfaction of a duly authorized agent or inspector of the State board of health.

Section 12. In the foregoing rules and regulations for the guidance of the local board of health, municipal officers, and citizens of the town of Athens, the word "smallpox" includes varioloid and that eruptive disease which has for some months been present in Athens and which physicians have called smallpox.

A true copy of the rules, regulations and orders made and adopted by the State board of health at a meeting held in Portland, January 9, 1904.

Attest,

A. G. YOUNG, *Secretary.*

January 25, 1904, a fourth visit was made to Athens and Brighton accompanied by Dr. Woodcock of Bangor, member of the State board. Complaints had come from Bingham as well as from Athens that persons from "Happy Hollow" who had recovered from smallpox or who were living in the same houses where there had been cases were running at large without disinfection. We visited "Happy Hollow" and found that almost all of those wretched people had passed through an attack of smallpox. From what could be learned it was evident that, of the little work of disinfection which had been done here, it had been entirely perfunctory. It is due the local board to record that, after the local board of health began to move, the work of disinfection done by Mr. Bucknam, a member of the board who was instructed by Mr. Torrey, had probably been efficient. Before we left the village, Dr. Woodcock and I called to see the local board of health and the selectmen who together were in session at Mr. Holman's office. We requested and required that a thorough disinfection of the West Athens pauper colony should be made and specified how it should be done, and we received assurances that the town would through the agency of Mr. Bucknam give "Happy Hollow" a thorough disinfection, and it was reported to the office that this was done.

It may be added that the course pursued by the town of Athens was more unsatisfactory to the State board than that of any town with which the State board has had anything to do, and it is safe to say that the surrounding towns were no better pleased with them. Of the surrounding towns, Brighton Plantation, Harmony, Hartland, Cornville, Madison, and Bingham

became infected, but in every one of these places save Brighton, the outbreaks of smallpox were promptly looked after and there was no extension of infection from the first points of infection.

The smallpox returns for 1903 made by the local board of health of Athens in January, 1904, were 36 cases in 19 houses. The estimates of the number of cases made by citizens of the town have varied from 50 to 150.

#### BENEDICTA.

In Fort Kent, May 19, 1903, a telegram was received from the office in Augusta that I was wanted in Patten to see a suspicious case. Returning from Fort Kent the next morning and from Patten by the evening train, I was waiting at Sherman Junction for the east-bound train when the Sherman Mills stage driver told me that the local board of health and the selectmen wanted me to stay over and advise them about a nuisance. It seemed necessary to say that it was impossible, but when he added that the people around there were apprehensive of the existence of smallpox in Benedicta then it became necessary and possible to stay over. By previous arrangement all persons interested in the nuisance were out very early the next morning; then with Dr. Upton a visit was made to Benedicta. Near the village three young men were overtaken. The face of one bore suspicious marks which upon examination was seen to be a sparse smallpox eruption in the late desquamative stage. Several other cases were found one of which, in a young man some distance from the village, had the disease in a rather severe form. Another, a man near the village, had the disease in the papular stage. A very pleasant call was made at the residence of Father O'Connor who gave assurances of his cordial co-operation with the local board of health in stamping out the outbreak; and his work proved very helpful indeed. With the local board arrangements were made for promptly beginning effective work. Dr. Upton was engaged by the local board to trace out all other possible cases, to vaccinate and otherwise to aid. To insure thorough work, Mr. E. M. Henderson of Hallowell, was employed to disinfect the first houses which were ready and to show the local board of health how to do similar work. The

outbreak was quickly subdued although it had gotten a bad start. There were twenty cases of smallpox altogether.

#### BETHEL AND NEWRY.

Dr. Sturdivant of Bethel telephoned in the evening of December 23, 1902, that a case of smallpox had occurred in a lumber camp in a corner of the town of Newry in which twenty-five men worked. The man, a Frenchman, when he was taken sick, went to Berlin, N. H. The authorities in Berlin sent him back and he was isolated in the lockup in Bethel. Dr. Sturdivant did not succeed in vaccinating the men in the camp. It was a French operator and he had a French crew. A second case subsequently appeared in the camp. The man was promptly removed and isolated in a small special camp built for the purpose. After the camps were evacuated in the spring, representations were made from Bethel as to the danger of letting them stand in their infectious condition. The local board of health of Newry were advised that the infected camps on the land of Mr. ——— constitute a nuisance and public danger, and that he should be required to render those camps safe. It was suggested that the more efficient way of disinfecting them would be by burning them, and that, by presenting the matter to the owner of the land upon which they were built, he would probably prefer to have them burned rather than to be to the cost of disinfecting them otherwise. The camps were subsequently disinfected by burning. There were 3 cases of smallpox in this outbreak.

#### BIDDEFORD.

In the latter part of October, 1902, an outbreak of smallpox occurred in Biddeford and the prevalence of the disease was not subdued until the spring of 1903. There were 166 cases of smallpox altogether in 48 tenements or houses. At the request of the mayor, the secretary visited the city January 14 and saw 35 cases which were quarantined in the smallpox hospital about a mile from the city. These were typical smallpox cases although many of them were exceedingly mild in form. Aside from the lines of work which the local board of health had been carrying out, there appeared to be a very urgent need for a



general vaccination of the people in the city, particularly of the French population among which the cases had almost exclusively occurred. A short time after this visit to Biddeford, the smallpox hospital was burned on a bitterly cold night and the patients were turned out-of-doors.

#### BRIDGTON.

At the request of the secretary of the local board of health of Bridgton, the secretary visited the town and saw a case of varioloid which had occurred in a young lady who had recently come from Boston. There was a discrepancy in the stories which she told at different times, but they were to the effect that she had been exposed to smallpox before she started to come home. A second visit to Bridgton was made May 9 to see a woman who had varioloid. The eruption was sparse and only in the papular stage. A few days after, however, Dr. Bray, the health officer, reported that the papules had gone through the regular transformation into vesicles. The source of the infection in this case appeared to be this: she was a cousin of the young lady who came from Boston. After the return of the Boston girl, the cousin carrying her baby with her visited her, and she and the baby slept with her the night before the eruption appeared. A new and clean night-dress for the baby had been carried on this visit. Upon the return, the night-dress worn at this visit was laid away and was not used again for a little while afterward. The beginning of the period of incubation seemed to concur with the point of time at which this visiting night-dress was again used without washing or disinfection. The whole number of cases of smallpox which occurred in this outbreak was five.

#### BRIGHTON PLANTATION.

In the latter part of November, 1903, a boy in Brighton was taken sick with smallpox, but the local board of health failed to report the case to the State board. The office was notified by Mr. Torrey, the inspector for the board at Athens. Information had been sent to him that the case was insufficiently quarantined. He was asked over the telephone to go up there and investigate. He was told at the house of Mr. Mathews, secre-

tary of the local board of health, that he was away out of town. A little later, however, one of the children in the stable artlessly informed him that their father was up in the woods and would be back at noon. Awaiting his arrival, Mr. Torrey learned that the father of the infected boy, Mr. Hussey, who had been working for Mr. Mathews in his mill and had been taking his dinners at Mr. Mathews' house had not been isolated, that he had been allowed to continue his work and to continue taking his dinners at Mr. Mathews' house. Over the telephone, Mr. Mathews was requested by the secretary of the State board to quarantine the father of the boy immediately, and was advised to have all of the men who worked in the mill, his own family, and all other exposed persons vaccinated with the least possible delay, and to have his house, particularly the dining-room, thoroughly disinfected. Mr. Hussey was temporarily sent home; but upon the return of Mr. Torrey to Athens, Mr. Hussey was allowed to continue working at the mill.

December 1, the secretary of the State board visited Brighton. He was told that Mr. Mathews was in Skowhegan and that on the way down, he could probably be seen there at a certain hotel. Two houses then infected, the Hussey house and the Leavitt house, were visited. A Leavitt girl had been attending the academy at Athens. She came home with smallpox in an exceedingly mild form. The disease was communicated to other members of the family. At the time of the visit, the mother and all of the five children save one boy had the disease. Some of the subsequent cases had been of medium severity and were typical cases of smallpox. The father was away in the woods.

When this girl returned from Athens, it was supposed she had chickenpox. She freely visited the Husseys, the nearest family to them. At the Hussey house Mr. and Mrs. Hussey, the baby, and the sick boy were at home. The baby presented what appeared as possibly the prodromal symptoms of smallpox. One day later this baby was dead. It was reported, I believe, that the child died of convulsions due to congestion or inflammation of the brain. As death with convulsions is a frequent ending of cases of smallpox among infants, it was altogether probable that the death was due to smallpox infec-



tion. Two of the members of the local board of health and the chairman of the board of assessors were seen and they were requested to see that efficient measures were taken to prevent the further spread of the disease.

Under the date of December 15, Dr. Turner of Harmony wrote as follows: "Four days ago (December 11) I was called to see a case of smallpox in Brighton, a Mr. Hussey you may remember as the man you ordered home and quarantined from a crew of men in the mill in that place and whose family were affected at that time. Now the case of this man Hussey is a severe case of smallpox, confluent on the face and hands, semi-confluent on the feet and legs, and discrete on the trunk."

Upon the receipt of the doctor's report of this case of smallpox, the local board of health notified him that his services were no longer required in the case, and employed the doctor from Athens who claimed that smallpox did not exist in the region. Judging from the severity of the case when he was called to it, Dr. Turner predicted a fatal termination, and he died on the 18th after an illness of only a week.

January 7, 1904, Mr. Henderson, the inspector for the Athens region, telephoned that the son of Mr. Mathews, secretary of the local board of health of Brighton was sick with smallpox. He had, from what could be learned, been sick with the disease about a week before the public knew it. If the father had notified himself as secretary of the local board of health of the existence of a case of smallpox in his house, he had apparently not notified the other members of the local board of health. January 20, Mr. Henderson visited the house and examined the boy, and although the process of disinfecting the boy and the house was going on, he remonstrated that the disinfection was premature as the period of desquamation was not complete and the scabs were still on him. January 25, Dr. Woodcock of the State board and the secretary drove up from Athens to Brighton and found that the period of desquamation was still not quite completed. Notice was therefore served upon Mr. Mathews stating that the process of desquamation was incomplete and requiring the isolation of the boy for another week and the subsequent disinfection of the house. It is probable, however, that these requirements were not complied with. Taking his

cue from Athens, the policy of denial of the presence of the disease and of doing as little work as possible to prevent the spread of infection was followed out.

There were 9 cases of smallpox in this town altogether.

#### CAMDEN.

A visit was made to Camden October 24, 1903, on account of the presence of smallpox. At this visit six cases were seen, one, a superintendent of the mill in his own house, a young man and young woman who were at work in one of the mills and were called out, two cases in another house, and one case in another in which the eruption was just appearing in the papular stage. There was a commendable promptness on the part of the local board of health and of everybody else in this town in getting to work and subsequently in doing good and thorough work for the purpose of stamping out the disease. It was found that some of the cases had existed for quite a little while and there had been many exposures. The mill owners co-operated very heartily with the local board of health and every mill of which there was a suspicion of infection was thoroughly disinfected with formaldehyde, although the quantity which was required for the disinfection would have appeared prohibitive to less generous and public spirited business men. The next day in answer to a telephone message two nurses, a man and a woman, were sent to the Camden board. The local board employed Mr. Henderson, one of the disinfectors for the State board of health, to do the disinfection and kept him busy for about three weeks. The total number of cases which occurred was 21. It is fair to assume that in view of the numerous exposures in the mills and elsewhere, the number would have been much greater and the epidemic would have been much longer continued if it had not been for the prompt work of all of the local authorities.

#### CEDAR GROVE.

This smallpox incident threatened to be serious but through the prompt co-operation of everybody concerned, it terminated more satisfactorily than was anticipated. On the evening of February 17, I learned by telegraph and telephone from Dr. C.

D. Smith, president of the State board, that the local board of health of Portland had taken from the noon train a man in the papular stage of smallpox who had been working for the ice company at their Cedar Grove ice house in Dresden. Visiting the place the next morning, I found in the large boarding house about seventy-five men of many nationalities, many of them tramps who had accepted a temporary job working on the ice—a harder and more troublesome crew than usual, I was told. Among these men various stories were going as to the nature of the disease which the man had who left the day before. Gathering the men together they were frankly told that from Portland I had learned that the man had smallpox, that he had left them while the eruption was in its earliest stage, that at this early stage cases of smallpox are not so infectious as later, that vaccination done within one, or two, or three days after exposure would have time to get ahead of smallpox and prevent an attack, and that vaccination does much more than to modify the severity of smallpox, for, when a "take" is secured, it affords just about absolute protection against taking smallpox, even in its mildest form. They were further advised that, if vaccinated now, I could promise them pretty confidently that not one of them would take smallpox. I further told them that a man would be there that afternoon to give their beds, their clothing, and their rooms a thorough disinfection, and that I would personally attend to their vaccinations, and that in four days, I would look them over and again vaccinate any in whom there was no evidence of a take. A few men made their escape before I got to them, and four of these returned two days later and were then vaccinated.

Mr. E. R. Bean, sanitary inspector for the local board of health of Augusta had been engaged to do the disinfection. He burned the infected bedding and filled the dormitories with formaldehyde gas, airing out the rooms only long enough to let the men go to bed rather late. We both remained over night and the next day the work of disinfection was resumed.

In this instance a nominal quarantine was not put on for the principal reason that, with the force available, it would have been impossible to hold them. They were requested, and they promised, to stay just four days, in the meantime to be disinfecting, to be vaccinated again if need be, each man to receive a

paper stating what had been done for him and then liberty to go anywhere he pleased. This kind of quarantine was rendered more effective by an arrangement with the company not to pay any of the men until the afternoon of the fourth day after they had been looked over again, and again had their clothing disinfected and had received a disinfecting bath.

The vaccinal history of these men was as follows:

Vaccinated within 5 years, 10; vaccinated 6-10 years ago, 9; vaccinated 11-20 years ago, 26; vaccinated 21-30 years ago, 7; vaccinated 31-50 years ago, 12; never vaccinated, 15.

Four days after the first vaccination was too early to determine how many would take; but thus early, 65% of the vaccinations gave somewhat trustworthy evidence that the vaccination was to be a success. Every man's name and usual residence was recorded when he was vaccinated. On the afternoon of the fourth day when the men were allowed to go, a copy of the following circular letter was sent to the local board of health of their towns or to the places where they probably would go within or outside the State:

AUGUSTA, MAINE, February 21, 1902.

DEAR SIR:—I herewith enclose a list of names of men who have been kept at the boarding house at Cedar Grove since the case of smallpox left there, and who say that they are residents of your town. The figures after the names indicate the number of years since a previous vaccination. For your information the following statement is made:

The case of smallpox left the boarding house Monday the 17th with the eruption in the early papular stage. On the 18th the men were vaccinated, and that afternoon and the next day all the rooms, bedding and clothing were disinfected by an experienced and trustworthy man, viz.: Bedding of patient burned; preliminary flooding of sleeping rooms with formaldehyde gas; second day, floors washed in bichloride solution; bedding and clothing spread out and again exposed to formaldehyde disinfection; men washed hands, heads, faces, and beards in bichloride solution; men's outer clothing fumigated with formaldehyde; many of the men have boiled their undergarments and dried them. Tomorrow shall revaccinate many; furnish overalls and jumpers, clothing again disinfected as well as circumstances permit, and the men will again wash in bichloride. They will leave on the afternoon train, Saturday the 22d.

I think there is little danger that any of the men come down with smallpox. I would advise that you simply keep them



under observation but not quarantine them. I have been frank and honest with them and their conduct has been very satisfactory to me.

Yours truly,

A. G. YOUNG, *Secretary*.

The certificate or paper which was given to each man read as follows: "The bearer of this, Mr. ———— was in the boarding house at Cedar Grove from which the smallpox patient left with the eruption in the early papular stage, February 17. The men were vaccinated on the 18th. Disinfection of floors, rooms, bedding, clothing and persons of men as efficient as was practicable. I think it very improbable that the bearer of this may come down with smallpox, and I advise that he merely be kept under observation for a short time."

Of the men thus treated, it could never be learned that one of them had smallpox. The intimacy of exposure to the smallpox case may be judged when it is stated that in the large room where the men slept, there were three rows of beds, each three bunks high with walks only two feet wide between the lines of bunks. One man slept above the smallpox patient and one underneath him.

One case of smallpox did, however, result from exposure to this case. Mr. Charles Wharff of Gardiner who was time keeper at the ice house at Iceboro just across the river from the Cedar Grove ice house was in the railway station with the smallpox patient while he was waiting for the train to come along which took him to Portland. When the train pulled up, the smallpox man and Mr. Wharff both stood looking out of the same window together for a moment.

#### CHESTERVILLE AND FARMINGTON.

In answer to a request from the local board of health of Chesterville for me to visit that town, and an unwilling promise over the telephone to do so, it seemed necessary immediately to mail the following:

"I had planned to start tonight on the Pullman for Island Falls and Fort Kent, to get back to the office to put in one day's work Thursday and to start out again for Jackman and Lowelltown the next night. I find that it will disarrange my plans

altogether too seriously if I should go up to your town, as over the telephone I finally said I would. If all those doctors mentioned by you call the cases smallpox, I should say that there is no need whatever of my seeing the cases for the purpose of determining what they are."

The latter part of these plans were, however, disarranged by a trip to Chesterville three days later, or October 1, 1903. Seventeen cases in five different houses were seen. In some of the cases the eruption had been only slight, and complete or pretty full recovery made a positive diagnosis out of the question. Most of the cases were plain smallpox. The necessary advice was given. It is very creditable to the local board and the town that the total number of cases of smallpox was only 20.

The school teacher from the infected district in Chesterville had an attack of what she thought to be chickenpox. After her recovery she went to Farmington without disinfection and took dinner at the Stoddard House. Called to Farmington October 13, one of the table girls at this hotel was found to be sick with smallpox. She was presumably the one who had waited upon the infectious teacher, though the truth of this assumption could not be determined. The eruption was then showing in the early papular stage, the temperature still remaining at 104° F. The indication was a severe if not a fatal case of smallpox.

The local board of health immediately got to work that evening and worked until two o'clock in the night before an isolation house outside of the village was arranged for her reception. Her bedding was then thrown from the window of the upper story where she was to the ground, whence it was put into the wagon in which she was to be transported to the isolation hospital. She was removed comfortably and safely, and visiting her in the morning before the train started, it was found that there was a declination of temperature and that she felt somewhat more comfortable. Though the attending physician subsequently reported that the eruption had become fully confluent and that there was not more than an even chance for her recovery, she ultimately recovered though she bears the evidences of a severe case of smallpox contracted from a mild case which had been supposed to be chickenpox. The hotel was quarantined for a short time until it could be very thoroughly



disinfected. No further trouble of this kind occurred in this town.

The total number of cases of smallpox in Chesterville was 16 and in Farmington, 2.

#### CLINTON.

Called to Clinton by the local board of health December 21, 1903, a young man of twenty-three who had never been vaccinated was found who gave the history of an illness beginning December 12 with severe fever, headache, backache, nausea and vomiting, and chill. The eruption came out according to the statement of the patient December 16 followed immediately by an amelioration of his general condition. When seen, he had a typical smallpox eruption, general in distribution, in the pustular stage. When first attacked, he was seen once by the attending physician, and as, after the appearance of the eruption, he felt so much better, he did not call the physician again and went to work in a hay-press crew. It became the problem for the local board of health to trace out the houses where he had been at work, to have all the members of these households vaccinated, and to vaccinate all other exposed persons. This, together with other necessary work including the disinfection of the houses, was promptly done. Six other cases occurred. This first case received the infection in Fairfield at a house where one of the inmates was supposed to be having an attack of chickenpox, the old, old story in the present epidemiology of smallpox.

As the advice which was given by a letter in regard to the management of a hotel which had become infected may be of general interest, it is here given:

Referring to the matter of the quarantined hotel in your village I would say that, if all the persons in the hotel who were exposed to the case of smallpox were pretty promptly vaccinated, my judgment is as I stated it over the telephone, that it would be safe to disinfect the house thoroughly, all parts at least which have possibly been exposed to infection, to hold the hotel in quarantine for only a few days until we can determine whether the vaccinations are to take, to revaccinate all persons in and about the hotel who were exposed and whose first vaccinations failed to take, and then to release the house from quarantine with the understanding that every person in the house shall be liberated under parol, that he shall not leave the town

or village without permission, and that every one of the persons shall be kept under observation to know that he remains perfectly well for about sixteen days after the last known exposure.

This opinion is based upon my understanding that not more than three days had elapsed from the first exposure of the people in the hotel, before they were vaccinated. If more than three days had elapsed before vaccination had occurred, the plan which I have outlined would not be so entirely safe.

#### CONNOR PLANTATION.

April 23, a letter was received from Dr. Thomas, of Caribou, saying that while attending a patient in Connor Plantation he had discovered that smallpox existed there. The inquiry which he made before he left the town satisfied him that the disease had existed for some time and that there had then probably been as many as fifty cases. Arriving in Caribou upon the first available train it was found that Dr. Thomas was out of town. In talking with one of the citizens who the year before had been upon the local board of health, the secretary received the advice that it would be impossible to stop the disease for the reason that it had already acquired such a hold. The answer was that it must and should be stopped. A supply of vaccine points, formaldehyde, and a formaldehyde generator had by telephone and telegraph been ordered to be sent to Caribou. Taking a team from Caribou, I drove to Connor Plantation, and found smallpox present in a typical form although so far as had been learned many of the cases, particularly the earlier cases, had been of a mild type. A member of the local board of health and the chairman of the board of assessors was hunted up. The latter expressed some indignation that his people should have allowed the disease to spread as it had, and promised to support the local board of health in doing everything possible which was required for the speedy stamping out of the epidemic. Arriving in Van Buren that evening, I met Dr. Thompson who had been ordered by telegraph and telephone to come down from the Upper Madawaska region. The next day, Sunday, a livery stable team was sent to Upper Madawaska to bring down the man who was assisting Dr. Thompson as disinfecter. Coming down to Caribou Monday morning on the freight train to save a few hours, the supplies which had come by express train were

gathered up and Dr. Thompson and Mr. Sears, his assistant, drove up to Connor Plantation and began work, Dr. Thompson vaccinating and Mr. Sears, his assistant, disinfecting houses in which the patients had already recovered. After several days' work in Connor Plantation it was necessary for them to return to the Madawaska region to finish up some work which they there had on hand. They then returned to Connor Plantation and in three weeks from the day the outbreak was first discovered it was practically wiped out. So far as could be learned no cases occurred after that time, although there were some houses that were not ready to disinfect as early as that. The plantation remained free of smallpox cases for more than a year when a few cases were found and cared for by Dr. Hammond, and his assistant, Mr. Keegan, of Van Buren.

#### DALLAS PLANTATION.

In answer to a call from the local board of health of Dallas Plantation, I arrived in Rangeley village late in the evening of April 22, 1903. Visiting Dr. Peabody, arrangements were made for an early start the next morning for the Bubier settlement where the cases were. A typical case of smallpox was found at the first house visited, and cases which had probably been smallpox in the next house, but the children had fully recovered. As more time was not at my disposal, we drove back to the village and out again on another road into Dallas Plantation to hunt up the local board of health. Arrangements were made for Dr. Peabody to take the general charge of the work for the suppression of the outbreak, and arrangements were also made with him to trace out all other possibly infected families in the settlement, and to visit Lang Plantation for the purpose of determining whether cases of smallpox might not have occurred there. The number of cases in this outbreak was twelve with three houses infected.

#### EAGLE LAKE OF THE ALLAGASH.

The following is the report of Dr. Henry Hawkins on this outbreak. As it was necessary to have the work in those camps done by the same men who had to care for men in other camps far distant from these, some of the earlier work here is mentioned under the "Upper Penobscot Region."

The source of infection was two men who came from New Brunswick and who ran away from quarantine and came into camp in November, bringing infection in clothing.

My first visit to the camp was February 1st. The history of the outbreak before that date is given as it was told to me.

Between the 12th and 20th of December, two men of No. 3 camp were taken sick with what was supposed by them to be a severe cold. A few days later an eruption appeared, smallpox was feared by the boss and clerk, the men were isolated in a small house at Tramway Camp, seven miles from Camp No. 3. This was done December 21. Word was sent out that there was probable smallpox in the camp and Dr. Varney and Mr. Fisher went into camp. By this time, January 3, there were two more men afflicted and they were isolated at the house at Tramway Camp.

The first men affected had been into Tramway Camp so that this was considered infected, and it was disinfected January 4 by Dr. Varney, and he and Fisher disinfected Camp No. 3, January 5.

Mr. Fisher left Dr. Varney in the woods and drove out to Patten on his way to fumigate some camps in the Nahmakanti region. I met Mr. Fisher January 7 at Patten and received the above statements from him then.

January 5, I went to Patten to meet eight men and the boss from Camp No. 3. They left camp Saturday, January 2, arrived at Patten Tuesday forenoon, January 5. When I met these men, they said that they were from Marsh & Ayer's Camp No. 3, and that they were leaving because of a "camp row," that there were not any cases of smallpox and that there hadn't been any. They left before Dr. Varney and Mr. Fisher had arrived, meeting them after dark Sunday night. Information was brought out of the woods by Mr. Marsh driving out to Chesuncook and telephoning to headquarters that some of the men had broken camp and were believed to be a source of infection.

A certain "Dan" Whalen left camp with these nine men. He was one of the principals in the "camp row" and fearing arrest left the rest of the men at Seboeis farm and went out to Island Falls by a back road. He later was the source of infection of the Morrison Camp and the Oakfield cases. The nine men that



I met at Patten were disinfected by me together with their clothing. One of them later had smallpox in Bangor. The rest escaped the malady.

Sunday, at 11 A. M., January 31, Mr. Fisher and I left Patten for Marsh & Ayer's camps. We took lunch at Shin Pond reaching Mitchell's Hotel Camp that night. Monday, we reached Tramway Camp after dark, sixty-three miles over toteroad behind a mean driving horse, and a mere apology of an ancient pung.

I found on the next day that all of the cases of smallpox were confined to Camp No. 3, that the cases isolated at the house at Tramway were taken back to Camp No. 3 among the men vaccinated and unvaccinated, because the men at Tramway Camp and Mill Camp threatened to leave if the smallpox patients were not removed from their vicinity.

At Camp No. 3, the crew was much crippled by this invasion of smallpox and the leaving of the ten men on January 3. To fill up the crew, men were taken from other camps regardless of whether the men were vaccinated or not.

By sending the sick men back to the camp and sending other men in, the disease was spread over a period of time from December 12-20 into March. The last cases to come down were a day or two after my arrival, February 1.

February 2, in the evening I made a census of the camp (No. 3). Out of 48 men, I found that only 21 had ever been vaccinated, only 18 vaccinated within three years. On this date, I vaccinated 20. This completed the vaccination of all the men who need vaccinating, since many had already had smallpox.

Friday, February 5, Mr. Fisher left for Patten and the Butterfield camps to disinfect whatever of the new camps might be ready for disinfection.

February 14, Mr. Fisher returned from the Butterfield camps and Patten, reporting that all would be ready to clean up in that vicinity in about one week or ten days.

I remained in the woods until February 17, calling often on the smallpox patients at No. 3. Four were very sick, one an old man rather feeble, a second who had much enteric disturbance, a third with marked eruption and edema of mouth and



fauces, and the fourth, a man about sixty, rather feeble, with marked edema of face and general systemic disturbance. During my stay, I visited six different camps, staying a night in a camp, taking a census of it and vaccinating all who would be vaccinated.

At No. 3, No. 2, and at Mill Crew Camp, I vaccinated every man. At Tramway Camp, I vaccinated all but two men. One of these left; the other, a blacksmith and Frenchman, was afraid of sore arm.

At Depot Camp, out of 43 men, 14 refused to be vaccinated. These were all Frenchmen, ignorant and stubborn.

At Camps No. 5 and 6, the larger number submitted to vaccination. A few Frenchmen and one Indian together with an Irishman refused vaccination.

Of the men in these camps, many had been vaccinated by Dr. Thomas in November and Dr. Varney in January.

February 17, I left the camps in charge of Mr. Fisher who was instructed to remain as nurse, to see that quarantine was kept, that the men infected were kept separated from those not infected, that after the last man had recovered, all of the men in the infected camp should be thoroughly disinfected together with the clothing and bedding.

The camp dog was also to have a thorough bath in bichloride solution. This work detained Mr. Fisher into March. All reports from Mr. Ayer, Mr. Mitchell, the walking boss, and others respecting Mr. Fisher's work, were very flattering to Mr. Fisher.

There were twenty cases between December 21 and February 2, the time between the attack of the first case and the last.

#### FAIRFIELD.

While in Greenville Saturday, November 7, 1903, a telegram was received from the office in Augusta that a suspicious case was present in Fairfield, and the doctors disagreeing, a diagnosis was wanted. Coming down on the evening train by the way of Bangor, a telegram was sent ahead to the secretary of the local board of health of Fairfield that I would stop off at Benton Station and stay at the Gerald House, and that, as it would be necessary for me to take the morning train to see to some mat-

ters in the office Sunday, he must be out early in the morning. For fear that the telegram might not be received, I paid the ten-cent driver who carried me across the river to drive to the house of the secretary and to notify him. Up the next morning early and nobody having appeared, a livery stable team was hastily summoned by telephone, and hunting up the attending physician and taking him along with me, the infected house was visited. Two cases of smallpox were found and directions were given to the secretary of the local board in regard to the management of the outbreak. Neither the telegram nor the verbal message had apparently been delivered the night before. As the disease in this infected house was at first supposed to be chickenpox, the disease was transmitted from this house to several other towns resulting in foci of infection which in each case were promptly suppressed. A few more cases appeared in Fairfield, making the total number seven for that town.

#### FORT KENT AND FISH RIVER REGIONS.

On his way to the Seven Islands region, Dr. Nichols, the chief inspector of the State board of health, saw a man recently down from the headwaters of the St. John river who had an eruptive disease of a somewhat questionable character. He had been sick about two weeks, and there was but little of the eruption left. The local board was advised to isolate the man and to vaccinate the other members of the family. A letter from the State board urged that it would be a serious error to let the man go at large. "He should be kept isolated until the period of desquamation is entirely passed, and the skin is entirely smooth-off; then he should be disinfected—he and his belongings, and the rooms which he has occupied, before he is discharged from quarantine." There is some doubt as to how fully these recommendations were carried out.

Early in March, 1903, it was learned that there was a serious outbreak of smallpox in an outlying district in the town of Fort Kent, known as Pearly Brook. For the purpose of controlling the people in that section and preventing the extension of the disease to other parts of the town a temporary quarantine was put upon this particular neighborhood. The persons quaran-

tined tore down the placards and the following Sunday one young man went to the village to attend services at the Catholic chapel in disregard of the quarantine orders. A barricade which the local board of health had necessarily or unnecessarily put up on the one road leading from this neighborhood to the village was torn down by the quarantined persons. Some legal questions as regards the proper action to pursue were submitted to the county attorney of Aroostook county, and he was asked to instruct Dr. Nichols, inspector of the State board, who was then aiding the local board of health. Two men found in the village were brought before the local trial justice under "anti-septic precautions." A fine of ten dollars was imposed upon one of these men and five dollars upon the other, together with costs. This they were obliged to pay. The lesson had a salutary effect, and in the future there was much less difficulty in carrying out the requisite measures for controlling the spread of infection. As one letter received from Fort Kent expressed it, "the effect of a little application of law is indeed wonderful." Nevertheless a succession of new cases in and about Fort Kent required a long and arduous pull to subdue the outbreak.

From February 2, to March 24, 1903, when smallpox was appearing in many places in the upper Madawaska region and while many lumber camps in the Fish river region were infected an inspector was, with the approval of the officers of the Bangor and Aroostook Railroad Company, put upon their Ashland and Fort Kent line, he starting down from the latter place on the morning train and returning in the afternoon. His duty was to prevent infectious persons from boarding the trains, and especially to prevent men from the infectious camps from leaving until they and the camps where they had been at work, could be thoroughly disinfected.

In the latter part of April, Mr. Cunliffe of Fort Kent, found a man on his drive up the Allagash breaking out with smallpox. He took him in his canoe and arrived in the village with him that same evening. Dr. Archambault was employed to carry him to his home in Wallagrass. It was then found that there were five families in that plantation already affected with smallpox. The secretary of the State board, immediately after receiving notification of this occurrence, visited Fort Kent. As

the action seemed to be demanded in the interest of the public safety, an inspection station was put on temporarily at the mouth of the Allagash. No new cases occurred among these river drivers.

The secretary of the State board of health, on arriving at Fort Kent on this visit, April 30, found that Dr. Flint, inspector for the State board was in Wallagrass. Returning to Fort Kent in the evening he reported that as there was no local board of health in that plantation he had used his influence that day with the assessors to have one appointed at once for the purpose of coping with the outbreak of smallpox which had been discovered in Wallagrass. Upon his recommendation the assessors had appointed Dr. Boulay, who had just arrived and settled in that place, as a member of the local board of health. He was made executive officer of the local board, and with the aid of Dr. Flint the local board began work immediately for the purpose of stamping out the disease.

As there was still considerable trouble from smallpox in the plantations surrounding Fort Kent as late as May and early June, Dr. Mason who had been in charge of the Glazier Lake inspection service, at the request of the State board of health, was transferred by the surgeon-general of the Public Health and Marine Hospital Service to Fort Kent as headquarters, the territory to be covered by him to be Fort Kent, and the plantations of Wallagrass, Eagle Lake, New Canada, St. Francis, and St. John. He worked in that region until about the middle of July when it was hoped that the epidemic in the surrounding plantations was practically over.

During the last half of the year 1903 but a very few cases of smallpox occurred in the upper part of the Madawaska region. Three cases were reported from Ft. Kent in November which were contracted from one case discovered in New Canada. The New Canada woman who had the disease received the infection while in St. Basil, N. B. In December one case was reported in Ft. Kent, the disease in this case having been contracted in Frenchville.

Early in December, 1903, Dr. Flint wrote that a case of smallpox had occurred in Cunliffe's depot camp on the Allagash and also that five or six cases had been reported in a camp on the



Little Black river. Dr. Flint investigated these outbreaks and took charge of them. The following letter written under the date of December 12 was received from him:

Last Sunday I left for the Allagash region to investigate reports of smallpox. I found that during my absence, a case had broken out at Cunliffe's depot and been isolated by Dr. Archambault and the crew vaccinated. Upon investigation I found that a portageur, infected with smallpox, had been staying at Gardiner's every other night for some time. This is a sort of half way house 26 miles above the Fort where all woodsmen stop over going up river. I fumigated the house, vaccinated the inmates and drove to ———'s operation to investigate some cases there said to be smallpox. I found it to be nothing worse than the itch. I returned to Gardiner's that night having covered 16 miles of the worst portage roads it was ever my misfortune to encounter. Tuesday I drove to Cunliffe's first depot, 20 miles of portage, very bad. Wednesday I drove to Cunliffe's second depot where I found one case of smallpox in the vesicular stage and another apparently in the prodromal stage. I vaccinated nearly all the men (this is at Gardiner's camp) and returned to Bouchard's camp that night, covering 32 miles this day. On the road between Bouchard's and Gardiner's camps I met two men leaving and sent them back. Tuesday I drove from Bouchard's camp to Cunliffe's first depot, 24 miles. While at Bouchard's I vaccinated about 18 men, then the virus gave out as I had not then received the last lot sent for. Friday I drove from Cunliffe's first depot to the half way place, 10 miles, and the horse being utterly exhausted I walked in 10 miles more, arriving at Gardiner's about 3 P. M. Being unable to secure a team here I walked six miles more, got a team and arrived in Fort Kent Friday night. The horse and man will be down to-day. While at Gardiner's six men came out from second depot, I challenged them but they declared they were not from any camp where smallpox existed and as I had no proof to the contrary I was compelled to allow them to pass. This was going up. I shall however have them arrested, tried and fined five dollars and cost under Section I of the special order of February 6, 1903. All of which I explained would happen to them if they were from any infected camp. I wish you would send the operators up this way copies of the special order of September 12, 1903, and extracts from copies of February 4 and 5, also send me a few and an "Abstract of the Health Laws." Now the man at Cunliffe's first depot is nearly ready to clean up, will be ready next week, in fact, and the man at second depot will be ready in about two or three weeks. Before that time a pest house will be built and the crew can be released from quarantine. It would be advisable to release



crew as soon as possible by fumigating and transferring patient. I think I have stated the facts quite plainly and will await your instructions as to the disposal of these cases and any more that may occur there soon.

(Signed)

E. T. FLINT.

In this work Dr. Flint had the help of two men as nurses and disinfectors.

January 30, 1904, he reported: There is no smallpox between Fort Kent and the northwestern boundary of the State. If any new cases occur they will be reported at once as I have made arrangements to that effect. There have been eighteen cases in Cunliffe's operation: Three at the lower depot, 50 miles from the Fort, and fifteen in the upper depot, 80 miles from the Fort.

#### GREENVILLE REGION.

In the fall and winter of 1902 while there was so much trouble in the lumber camps north of them, Greenville and the surrounding townships escaped smallpox. The first intimation of trouble there came in a telegram from Dr. Hunt of Greenville, August 28, 1903, reporting a case of smallpox in one of the camps of Mr. Charles J. McLeod of Old Town above the Northwest Carry and one in Greenville too. Aside from serving as the medical advisor of the local board, the doctor was asked to take for the State board of health the first necessary steps to prevent the spread of the infection. He sent his assistant, Dr. Moody, up to the head of the lake who reported August 31 a typical case of smallpox and that about fifty men in several camps within a radius of fifteen miles had been exposed, and that it would take some days to make the tour of the camps. After visiting the infected camp himself, Dr. Hunt reported September 1:

The man with smallpox was in the Queen Hotel in Bangor while the cook there was sick with "chickenpox" so called by the attending physician. D. is a cook and took the place of the sick cook during her illness. When he broke out up in the woods, he came out eighteen miles on horse back calling at different camps on his way out.

Staying over night at one when about to take the boat for Greenville, Dr. Williams of Houlton saw him and pronounced it smallpox and sent him back to the nearest camp. Dr. Moody is now going over the route and vaccinating them all.

The secretary of the State board was up to the head of the lake September 4, and again September 12 to see a second case which had developed from exposure to the first case. At the second trip up the lake, arrangements were made to put the cases into the hands of a competent nurse who would, with other duties, attend to the final disinfection when the cases were all cleared up. This was done. Only these two cases occurred in these camps.

In Greenville, September 13, there were eight cases of smallpox, all men and all quartered in a camp two miles or more from the village. While passing through Greenville, these cases were twice seen through the courtesy of Dr. Hunt, acting health officer of the town. The first case came from a lumber camp in Blanchard. He went to a boarding house in the village in which nine cases developed from September 7 to 14. The source of the eleventh case, a boy, was unknown; the twelfth case, that of a little girl, apparently derived its infection in Bangor; the thirteenth case was that of a man who came from a lumber camp near Macamp up the Canadian Pacific. Subsequently the State board was obliged to send a man to this camp to take care of smallpox which developed there. These three cases occurred in October. The fourteenth and last case was reported November 6. The man, a citizen of the village, thought he might have received the infection aboard a train.

At the time of a visit to Greenville November 11, a provisional agreement was made by the secretary of the State board and the municipal officers and local board of health providing for mutual co-operation. At this time it looked as though Greenville might be a dumping ground of cases of smallpox from the lumber camps, and the State board of health wished to have the privilege of using, if needed, the two buildings which had then recently been erected as a smallpox hospital. The agreement which follows was ratified by the State board at its next meeting:

1. When the State board of health deems it necessary to do so, it may bring persons who have smallpox or who are suspected of having smallpox from lumber camps or from other places in the surrounding plantations or unorganized townships, and shall have the privilege of keeping them and caring for them in the buildings erected by the town of Greenville as small-

pox hospitals or isolation buildings for suspected cases. For this class of cases the State board of health shall furnish medical attendants, nurses, and food, and shall bear all expenses thus incurred.

2. All persons with smallpox who have a legal settlement in other towns shall be cared for without expense to the State board of health.

3. For persons who come to Greenville of their own accord (not brought there by the State board of health) the expenses of medical attendance and of nurses shall be furnished by and at the expense of the State board of health, and the food by and at the expense of the town of Greenville.

4. The cost of heating and lighting for all three classes of cases shall be divided equally between the State board of health and the town of Greenville.

#### HALLOWELL.

August 16, 1902, Dr. Frederick of Augusta came for me to see with him some suspicious cases in the little village at the Hallowell Granite Quarries. Seven cases of smallpox were found and it was learned that the disease had been present several weeks in the village. Some of the cases seen on this day were very plain and quite severe cases; nevertheless, the remnants of the lesions left on other cases indicated a scant eruption. In most of the cases the clinical histories were remarkably typical of smallpox. Many of the cases which subsequently developed were severe. Several were fully or partially confluent. In one case, the eruption affected the mucous membrane of the respiratory tract so that the patient's life was nearly lost through spasm and edema of the glottis. One man was found who had fully recovered and had resumed work in the gang of workmen still bearing the characteristic vivid colored spots all over him. There had apparently been many exposures.

Driving to the city of Hallowell, the local board of health were notified and got to work immediately for the purpose of checking the further spread of the disease. Another visit was made to the quarries the next day and three additional cases of smallpox were found. The local board of health had established their quarantine and were busily engaged in vaccinating and in doing other necessary work. As in some directions doubt was still expressed as to the nature of the disease, Dr. C. D. Smith, president of the board, saw the cases on the evening

of May 20. There were then thirteen cases which he saw and his diagnosis was "positively smallpox." But one case occurred in the city. There were nineteen cases in all and eight houses were infected. The disease was thought to have been brought from Canada by a Frenchman.

#### HOULTON.

A visit was made to Houlton, May 19, 1902, to see a man at the Snell House supposed to have smallpox. It was found that the patient, a commercial traveller who did not believe in vaccination, had the disease which was then in the vesicular stage, a moderately severe case. There was a history of some exposures. Another visit was made to Houlton June 10. There had then been three cases. The third case was that of a school boy who was found the day before with vesicles well developed and who was in school up to Friday, the 6th. The school had been stopped. The local board of health were advised that for the pupils in that school, that was about the last day of grace for vaccination. They were to hunt up and vaccinate all that very afternoon and evening. A fourth case was seen, that of a boy who had probably been exposed to smallpox infection. He had subsequently been vaccinated. Slight traces only of the three papules which appeared were present, and although the clinical history was somewhat indicative of varioloid, it was not possible under the circumstances to make a diagnosis.

A visit was made on June 11 of the next year to see a case in Houlton which proved to be smallpox.

#### JACKMAN REGION.

Anticipatory of smallpox trouble there had for some time been an arrangement with several physicians at points on the border of our State which were deemed specially exposed, to take immediate action in accordance with general instructions already given if action should be necessary.

October 24, 1902, a letter was received from Dr. Estes Nichols, the medical inspector at Jackman, saying that: "There are twenty-eight cases of smallpox at St. George just over the line. One lumber camp has been quarantined and deserted.



We are afraid we shall get the disease here, there are so many men coming over to work in the woods. I shall station a man at the line and drive up each afternoon to vaccinate and disinfect." On the same day a telegram was sent to Dr. Nichols approving this action and informing him that a supply of vaccine virus had been sent. Under the same date the following circular letter was issued from the office of the State board of health:

"AUGUSTA, MAINE, October 24, 1902.

DEAR SIR:—I wish to call your attention to what seems to be a serious danger to the prosperity of the lumber business the coming winter. In many of the other states there is now quite a large prevalence of smallpox, though we do not see much about it in the newspapers, and the same is true of many parts of Canada. It looks as though we might have pretty frequent outbreaks in the lumber camps unless we all co-operate in taking rational precautions. The only rational precaution is for the operators to require that every man in his camps shall be protected by a recent vaccination.

I am fully aware that there is some difficulty in getting men for the woods, and that some men will object to vaccination, and that some vaccinated men will have to lay off a few days; but I submit whether these disadvantages are great enough to justify any operator in taking the chance of having smallpox in his camps. Almost invariably when that occurs it is impossible to hold the men, and when it is possible to do so, there would be likely to be difficulty in getting in supplies to infected camps.

An exposure of this kind has lately occurred in one camp in the State. A man from Massachusetts, developed smallpox after he had gone to work in one of the camps in Penobscot county. After this occurred, the remaining men were vaccinated as soon as possible. One additional case has occurred from exposure to the first case, although vaccination was done as early as possible, but not early enough to insure absolute protection. The State board and the local boards did their best as in the interest of the lumber operators, the men themselves, and the communities outside, to have the men remain at the camp, but it has been found impossible to keep them there. It looks now as though the winter's operation would have to be abandoned.

Last night, I received word from Dr. Nichols, of Jackman, inspector for the State board of health, that that region is all severely threatened with the danger of the importation of smallpox infection into the camps. Smallpox is prevailing across the line, and one lumber camp there has been quarantined and



deserted, and many men have been coming across to get work in the woods in our State. The doctor has stationed a man upon the road to keep them back. Arrangements will be made as soon as possible to have an inspector stationed on that road for the present, and arrangements made for the vaccination of all men who come across, but the fact is that many will evade him.

If you and every other operator will require the vaccination of every man working in the camps, the whole danger will be obviated. If you will agree to this, the State board of health, on its part, will issue a special order requiring the vaccination of every man coming from Canada to work in the woods, or it might be better to make it a more sweeping order requiring every man, no matter from where he comes, to be vaccinated. You could, therefore, if you so wished, throw the onus of the requirement upon the State board of health.

Kindly let me hear from you about this matter.

Yours truly,

A. G. YOUNG, *Secretary.*

The issuing of the special order to which reference is made in the preceding circular letter was delayed on account of some complicating questions with reference to interstate relations, but finally under legal advice the following special order was issued.

On account of the presence of smallpox in some places in the Province of Quebec adjoining or near the northern part of this State, the State board of health deems it necessary to make the following rules and regulations.

Section 1. It is ordered that until further notice, no person shall come into the State of Maine from or through the counties of Compton, Beauce, or Dorchester in the Province of Quebec to work as a laborer in lumber camps or elsewhere unless he shall have been successfully and recently vaccinated.

Section 2. All persons coming to places in Maine from those parts of the Province of Quebec mentioned in Section 1, shall immediately report their arrival to the local board of health of the place to which they come, or to an inspector, or agent of the State board of health.

Section 3. Persons violating this order will be liable to arrest and quarantine, and, as the law provides, they "shall be punished by a fine of not more than five hundred dollars, or by imprisonment in the county jail for a period of not more than six months, or by both fine and imprisonment, in the discretion of the court."

By order of

STATE BOARD OF HEALTH.

Copies of this special order were widely distributed in these three counties of the Province of Quebec, that men coming from this part of the Province seeking employment in the woods might be informed of what would be required of them.

It was recognized that to interdict or to discourage all travel from or through these infected counties, would be undesirable, and would make a hardship to the lumber operators who were depending largely upon the men from these regions to complete their crews. While the special order was widely distributed where it was desirable its requirements should be known, and the treatment of the men was thorough, it was sought to treat the men fairly and well.

Arrangements were made for the inspection service at the Line House where the old Canada road crosses the line. Only the few were turned back whose histories of exposure to infection or other circumstances indicated to be extra hazardous. All others were stripped, given a disinfecting bath, put to bed, and their clothing and bundles were disinfected. The men were vaccinated and in due time received their disinfected clothing, were presented with a certificate showing what had been done for them, and allowed to proceed on their way.

It could not be learned that this inspection service had any material effect in diminishing the number of men coming over, nor could it be learned that a single man seeking work in the lumber camps, gave up his prospective job and turned back rather than undergo disinfection and vaccination. The attempt was, however, made now and then for a while to run around the inspection service. But the arrest of men who attempted this and the co-operation of the lumbermen in refusing to hire men who could not show a certificate indicating that they had been passed by the inspectors, soon stopped this.

It was also learned that a few men from the infected counties were going around to Megantic and entering the State by the way of the Canadian Pacific. Arrangements were, therefore, quickly made with Dr. J. M. Boothby, of Lowelltown, to act as inspector on incoming trains. The inspection service thus established was maintained until late the following spring and after the river drivers had ceased to come across the line.

One source of danger could not wholly be obviated. It was impossible with the available force of inspectors to guard every trail across the line from Jackman to Lowelltown. The result was that a few infected or infectious men found their way into a few camps whose owners or bosses did not early enough appreciate the necessity of doing their part in a vigilant guard

against infectious persons or those who did not bring the requisite vouchers.

The instructions to the medical inspectors were that when they learned of smallpox in a lumber camp they were to get there as soon as possible, to remove the infectious person or persons from the camp, to isolate them in a small special camp built for the purpose, to vaccinate the remaining men of the crew, and to disinfect the camp as thoroughly as it was possible to do it. Further a part of the policy pursued in this work was for the inspectors to use their utmost influence with the crews to stay right where they were, and to continue their work—this as the best course for them, for their families and friends at home, and for their employers. They were assured that early vaccination would be very likely to guard them from smallpox, and that if they became sick they would be cared for.

The first infected camps in the region received their infection from the Canadian camp to which reference has already been made. This, Canadian camp was quarantined, the men broke quarantine, some of them went home and some came over to our camps. The results were that a considerable number of our camps were infected.

When cases of smallpox began to appear in camps miles apart it was manifestly impossible for one medical inspector in this region, even with the aid of his nurses to control the whole situation. Arrangements were made with Dr. J. B. Thompson, of Bangor, to go as an assistant in this work in the Jackman region. Dr. Nichols, thoroughly acquainted with this whole forest region and understanding the conditions of camp life, took to the woods in the work of looking after the infected camps. The medical and sanitary care of smallpox patients in camps scattered many miles apart was found to be a difficult and costly work. The plan was therefore adopted of concentrating in a central place all of the cases whose removal from camp was practicable.

The village of Jackman and Moose River, as the centre to which men resorted in seeking work in the woods, and as the nearest place at which medical aid could be obtained, was peculiarly exposed to the danger of smallpox infection. The town of Jackman and the plantation of Moose River combined in

erecting a building to serve as a smallpox hospital. This hospital two miles out of the village was used by the inspectors of the State board for the isolation and treatment of the cases of smallpox brought out from the camps as well as for the care of some cases of smallpox just out from camp and picked up on the street.

The first two cases isolated in this hospital came out of a lumber camp at Holeb. They were found in a French boarding house in the village November 15. The boarding house and the camp were quarantined and a man was put in charge of the camp.

The following extracts from the letters received from our medical inspectors at Jackman give some indication of the imminent danger then present of the wholesale infection of the lumber camps, but they give only a slight idea of the hard work which was done in trying to prevent the spread of infection and in suppressing outbreaks as they occurred.

November 16. Dr. Nichols wished me to drop you a few lines to-day regarding the smallpox cases. He himself has just left this afternoon for Holeb to close the lumber camps, from whence came these two cases, at Jackman.

The doctor sent for me last night to come down from the Line House. There is a man to hold all crossing, still on duty there. I saw the two cases with Dr. Nichols this morning. One has reached the vesicular stage being well covered. The other is just breaking out into the papular, having all the symptoms, backache, high temperature. Dr. Nichols had word just before he left that two other men from the same camp having the disease escaped into Canada, where they were caught. He also believes that there are some men sick at the camp.

A man died of smallpox at St. George a few days ago, and other cases have broken out. Since the 10th very few have crossed the "line" the road being in bad condition on account of almost continuous storms.

(Signed)

J. B. THOMPSON.

November 18. Dr. Nichols wished me to drop you a few lines this A. M. enclosing a list of the lumbermen operating in these regions. He arrived from Holeb yesterday afternoon and started out again early this morning to camps, 40 miles to the south of the ones visited, expecting to return Thursday. The two cases here are doing well.

(Signed)

J. B. THOMPSON.

November 19. I had a telegram yesterday from B. Fisher, the man stationed at Higgins's camp, near Holeb, saying the



men there were escaping, twenty going into Canada by way of Megantic and the rest coming to Jackman.

Dr. Nichols being away and fearing that they might go to Greenville and neighboring towns I placed men at Moose River bridge to watch for them last night. Also notified train officials. None came this way unless they passed before I received the telegram from Fisher. Had an urgent telegram from Lowelltown from Dr. Boothby this morning, saying men were *pouring* through the town and woods about it into the State. He wished to know if the State board would back him in taking all precautions. Dr. Nichols still being away and Dr. Woodcock not having arrived yet, I wired yes.

The town here is up in arms and are not going to let any French Canadians pass through. They are going to place men to warn them off, both up toward the line and at railroad station. Dr. Nichols will not return until tomorrow. There was a case in the camp where he was going. Expect the men will try to escape there.

(Signed)

J. B. THOMPSON.

November 20. Dr. Nichols arrived home last evening from \_\_\_\_\_'s camps. Found a man there sick with smallpox. Vaccinated all and quarantined camp. He left again last night on midnight train to go to other camps near Holeb and vaccinate the men. There are only two cases of smallpox, outside of these two here at Jackman, that we know of in this region. Of course other men have been exposed in these infected camps.

(Signed)

J. B. THOMPSON.

November 23. Dr. Nichols left last night on midnight train for Lowelltown to investigate conditions there. He did not see Dr. Woodcock except a few minutes at the station. Dr. Woodcock going on the train he arrived on. I took Dr. Woodcock over to the pest house and also invited the town officials in to see him, that he might answer any questions they wished to put.

One of the infected camps is in the township of Holeb as I understand it, and the other is in a region called the Enchanted, taking its name from a pond. I will endeavor to find out more exactly the situation of camps. Dr. Nichols wished me to say that he needed another physician. The region about here is a vast one to cover.

(Signed)

J. B. THOMPSON.

December 4. Sunday, P. M., I had a call into a camp on Enchanted stream, to Peter Boyle's Camp, I found a man all broken out with smallpox. I put the man in a new camp and thoroughly fumigated the old one, the men are all vaccinated and with all else I hardly think there will be any more cases.

This was a mighty hard trip, I got back last night having traveled all day in a raging snow storm. The disease seems to appear where least expected, it is hard to tell where it will next



appear. I shall endeavor to get after it where it appears and by early measures try to limit it as much as possible.

(Signed)

ESTES NICHOLS.

In the latter part of November it was found that while many of the lumber operators were co-operating with the State board and its inspectors, some, not appreciating the gravity of the situation were not taking adequate precautions. The following circular letter was sent to every operator in the State whose name appeared upon our frequently revised list:

OFFICE OF STATE BOARD OF HEALTH,

AUGUSTA, ME., November 24, 1902.

DEAR SIR:—Just one month ago I issued a circular letter calling the attention of the lumbermen in the State to the imminent danger of the introduction of smallpox into their camps by men from Canada. Since this, in spite of the best efforts of the State board of health and of the few scattered local authorities in the northern part of the State, the fear has been justified. Smallpox has appeared in several camps in our State north of that portion of the Canadian Pacific road between Jackman and Lowelltown, and the camps in all the northern part of the State are threatened more or less.

Answering some of the questions received from lumbermen and making some suggestions, I would now say that this board has, for some time, had three medical inspectors and several nurses and other assistants who have been making a strenuous effort to prevent the importation of more infection and to suppress the present outbreak. Nevertheless, there are so many trails across the line that we can have no assurance that new doses of infection may not come. The following just received from our chief inspector, Dr. Nichols of Jackman, may serve as an answer to some questions.

"I have just returned after having walked about sixty-five miles in three days. I have seven cases under my care now. It is impossible to move them out of camps to Jackman. You see they are somewhere about thirty-five miles from there. I have taken a nurse in to them and had a separate camp built for the sick. They are so scattered that it is a mighty big job looking out for them. Only one concern has been broken up and that on account of the company not building a camp as I asked them to do. These men who escaped all went to Canada. We must not allow this to go any further. I have been up night and day for ten days past. I don't know how long I can stand it, but I think I can rest pretty soon."

He also writes that he visited a lumber camp one mile across the line where he found ten men sick with smallpox, two of whom he thought will not live. All the rest of the men had deserted the camp and gone to their homes in Canada.

The State board cannot undertake to vaccinate the men in all that vast region. That is far beyond its means. The operators must do that or more of them will be sorry.

I would suggest to all lumbermen in the northern part of the State to build without delay a small camp in which suspicious persons may be lodged instead of taking them into the main camp and possibly exposing the whole crew to smallpox infection. In case of any suspicious sickness, the sick person could be isolated there until the character of his disease could be determined.

I enclose circulars which will give you some information what to do in case smallpox breaks out in any camp of yours.

Yours truly,

(Signed)

A. G. YOUNG, *Secretary*.

Work like that which is indicated in the foregoing correspondence was carried on until we were assured of the complete suppression of smallpox infection in the whole of this Jackman region, which was February 28 when the smallpox hospital was closed and the inspectors were discharged or assigned to duty at other points where they were much needed. December 24 it was necessary to send Dr. Nichols to take charge of other outbreaks in the northern part of the State and Dr. Luther Mason, of Bangor, was sent to the assistance of Dr. Thompson.

In this region between Jackman and Lowelltown extending on both sides of the Canadian Pacific Railway, six camps were infected; the whole number of cases of smallpox was 21; and the greatest number of cases in the hospital at any one time was 7. Four cases of smallpox developed in one camp. These were too far away to be moved to the hospital.

#### JAY.

In the latter part of March, 1903, one outbreak of smallpox occurred at Chisholm's Mills. In June, there was another outbreak of smallpox. In most instances in which reports are received that smallpox and chickenpox have co-existed, it is found that there have been cases which have correctly been called smallpox and other mild cases of smallpox erroneously diagnosticated as chickenpox. In a few cases, however, the two diseases have been found prevailing at the same time. In Jay, there had for some time been a prevalence of an eruptive disease, particularly in one of the school districts, which had

been called chickenpox. A visit was made to Jay June 13 to inspect some cases of doubtful character. Several houses were visited, and in all of which any data were available for diagnosis, the cases appeared plainly to be chickenpox. At one house, that of a French family, nobody was at home except a boy and he could give no information of value. But in the last house visited that day two little girls were found presenting a typical smallpox eruption in the pustular stage. One of these girls was three years old and the other seven years of age. Neither had ever been vaccinated. Both had suffered an attack of chickenpox the preceding autumn. One was taken sick June 3 and the other June 4. There was a prodromal period of three days in which there was headache, fever, and nausea and vomiting. Promptly upon the appearance of the eruption, the children were much better. The clinical history as given by the mother was perfectly typical of smallpox as was also the globular appearance of the pustules, regularly circular in outline and covering the whole surface of the body including the palms of the hands and the soles of the feet and having upon the arms and other portions of the body covered by the clothing distinct areolae. There was no hesitation in making a positive diagnosis of smallpox in these cases.

This was Saturday, and a further investigation could not be made that day. It was planned to resume it the next Monday, but it was impossible to do so until Tuesday, the 16th. On this day in the first house visited three boys were found. The youngest, seven years of age, had so fully recovered that a positive diagnosis could not be made. In the next two attacked June 5 and June 6 respectively, there was a history, as stated by the attending physician, of a temperature of  $103^{\circ}$  in the one case and  $104^{\circ}$  in the other, with the eruption appearing on the third day in both, followed immediately by a distinct lowering of temperature and a marked amelioration of all the symptoms. The appearance of the eruption in these two cases was so distinctive that there was no hesitation in making a positive diagnosis of smallpox. All of these three boys had had chickenpox the fall before according to the diagnosis of their attending physician.

Visiting the French family again, it was found that a girl in that family still bore distinctive traces of smallpox eruption. By



careful inquiry it was learned that the Frenchman, the father of this family, had been on a visit to Montreal and a neighboring Canadian town, that he had taken his youngest boy along with him, and that they had apparently, in some way, brought back smallpox infection with them. This man claimed that he had not had the eruptive disease, that it was only "rheumatism" which he had soon after his return. He claimed further that his eldest son had suffered from the eruptive disease before his return. So far as could be learned, this was true, and that the disease was chickenpox contracted in his school.

After his return from Canada, this man had worked for both of the farmers who lived in the two houses in which the cases of smallpox had been found. At the house where the two little girls were, he worked from the 20th to the 30th of May. One of them was taken sick fourteen days and the other fifteen days after he began work at this house. All the other cases found that day were, or appeared to have been, chickenpox.

In this town, and particularly in the school district where chickenpox had prevailed, the feeling was intense against the opinion that smallpox was present. It was well expressed by an intelligent old lady at one of the last houses visited on the second day that "any old woman with half an eye would know that there had been nothing but chickenpox." She was correct so far as concerned her own neighborhood. Dr. Pudor of Portland was called to the town a few days later and as the local board of health reported, confirmed the diagnosis of smallpox in these two houses and also made the interesting observation at the house of the Frenchman that the girl whom I had found still bearing traces of the lesions of smallpox was then coming down with chickenpox, and that the boy who had previously had chickenpox was suffering with the prodromal symptoms of smallpox. It was further reported that some of the people still remained incredulous. There were altogether in the town of Jay eighteen cases of smallpox and seven houses were infected.

#### KENNEBUNK.

February 8, 1902, information was received over the telephone from Dr. Smith, president of the State board at Portland, which caused the following telegram to be sent to Dr. Ross, secretary of the local board of health of Kennebunk:

Louis Nelson came from Boston to Kennebunk yesterday. Had been sick in Boston a day or two. Stopped over night at hotel in Kennebunk. Mousam House, perhaps. Came to Portland this morning. Met a police officer and told him he thought he had smallpox. Policeman took him to Dr. Brooks of the Marine Hospital. Dr. Brooks isolated him with smallpox. Investigate what hotel and take needed action. If necessary, telephone to Dr. C. D. Smith, Portland.

Two days later it was learned from the local board of Kennebunkport that this man had left the fishing schooner, Sadie Nunan, in Boston and that this schooner had arrived at Cape Porpoise in that town. It was further reported that the Sadie Nunan had been disinfected and that the crew and their families had been vaccinated. The president of the State board went to Kennebunk, Kennebunkport, and Cape Porpoise, examined the crew of the schooner still aboard and at their homes, and had a consultation with the local boards of the two towns. Dr. Douglass of Kennebunk was employed to carry out the necessary precautionary work at Cape Porpoise. February 24, he reported that no additional cases of smallpox had developed.

In the latter part of the year, however, an outbreak of smallpox occurred in Kennebunk. At the request of the local board, an inspector was sent December 24 who found two cases of smallpox in the pustular stage. A considerable number of persons had been exposed. In his opinion the infection had been derived from Biddeford. Two secondary cases occurred.

In 1903, there was an outbreak in which 26 cases occurred in the early part of the year. Infection was derived from Biddeford. A boy had come from Biddeford with the disease in a very mild form. The infection of all the other cases was traced to this unrecognized case.

#### MID-MADAWASKA REGION.

In the towns between Fort Kent and Van Buren arduous work to cope with the smallpox situation has been required of the State board and local boards of health. In all of these towns, Frenchville, St. Agatha, Madawaska, and Grand Isle, and Plantation No. XVII, lying between New Canada and St. Agatha there has at times been a serious prevalence of smallpox. Help has been given to these towns by Drs. Nichols, Hammond,



Thompson, and Hawkins and their trained disinfectors. In addition to this the Public Health and Marine Hospital Service has rendered valuable aid in these towns along the boundary line.

Though weekly reports were received from our inspectors, they and their assistants were often working in several places within the week and the work was done partly by the local boards and partly by the helpers sent by the State board. It is therefore difficult to give a consecutive and connected history of the work in these towns, but the following fragmentary presentation will give some idea of the character of the work and of its difficulties.

Among the difficulties was that presented by the immense fall of snow in the Madawaska region in the winter of 1902-3, reported as five and, in some places, even six feet in depth; and by the mud in the spring which for a time rendered travel more laborious and disagreeable than wading through or climbing over snow drifts.

Under the date of January 22, 1903, the following was sent to Dr. Nichols, then supervising work against smallpox in the Fish River region:

I telegraphed to you, hoping to reach you at Eagle Lake, to go to St. Agatha where smallpox has broken out. You could go either by way of Fort Kent or Van Buren. I have just had a letter from Dr. Cote, of Frenchville, that the town of St. Agatha is not organized and they don't want to be organized. St. Agatha is an incorporated town, set off from the town of Frenchville a few years ago. I think that he means that the local board of health is not organized. I enclose a copy of a letter which I have just sent to him. If, when you receive this you have not been up there, I wish you would go up as soon as you can and make a survey of the situation and start effective work and then get back to the Presque Isle region as soon as you can. I must send another man up there to help you if I possibly can. I am negotiating with two.

(Signed)

A. G. YOUNG, *Secretary*.

January 25, Dr. Nichols reported: At St. Agatha, where there are seventeen cases, I could trace the infection to Morrison's Camps at St. Pamphile. Two boys came out of there about a month ago. While they did not have the disease they brought it in their clothing. Their mother was a midwife. She developed the disease and the three houses where she has attended cases of childbirth since, have taken it from her. One

house where there are ten persons, all have the disease in some stage. The baby which is now about three weeks old has the disease in a confluent form and one of the men also. They all have it in good shape. It is confined to four houses at the present time. We quarantined these houses, and Dr. Coté will attend to cleaning them up if he can be assured of pay. The town is opposed to expending any money. Things are looking much brighter in this district. I hope in three weeks I can give you a pretty good report of this ground.

(Signed)

ESTES NICHOLS.

The situation in this town caused by the disinclination of the town officers to exert themselves or to make any expenditure for the purpose of preventing the spread of the disease, has not by any means been a unique instance in these St. John towns. It seemed to justify this sort of paternal letter:

I write this because there is great danger of the spread of smallpox in your town. The law says that under certain circumstances the local board of health, the selectmen, and the citizens of the town shall do certain things to prevent the spread of smallpox or other infectious diseases. The law also provides a penalty to punish persons who do not obey the law. Such persons may be fined, and in case they cannot or will not pay the fine may be imprisoned for disobedience of the laws.

Smallpox must not and shall not be allowed to spread in your town. If it should spread, it would cause very great trouble and loss to everybody in your town. If you should fail to take such action as the law requires, and the disease should spread so as to endanger other towns, the State board of health might be compelled to quarantine your whole town. That would simply mean that no person shall leave your town and go to any other place, and that no man will be allowed to go to any mill for work, or upon the drive, and that if he should, he will be liable to be arrested, placed in quarantine, and fined or imprisoned, or both fined and imprisoned at the discretion of the court.

When the local board of health of a town, or the selectmen, or any citizens of the town, in a danger like that which now threatens, is ordered by the State board of health to do as they are required, they are liable to the punishment which the law provides, if they do not do it.

I feel sure, however, that you can see that it will be very much for the interest of your town and for every person in the town to stop the spread of smallpox as quickly as possible. The quickest way to stop this spread will be the cheapest way to your town.

In every town and organized plantation in which smallpox appears, the State board of health insists that the disease shall

be stamped out quickly. The State board will do all it can to help, but it cannot and will not take off your hands the work which you should do nor pay bills which belong to you to pay.

• (Signed) A. G. YOUNG, *Secretary*.

A local board of health was appointed by the municipal officers of St. Agatha, with the Rev. H. Gory as secretary. Dr. J. B. Thompson who, as inspector of the State board of health, had been stationed in the middle Madawaska region, sent a report the first of May in which he commended the prompt and efficient work which had been done by Father Gory after his appointment, and all of the subsequent reports indicate that the good work has continued.

In a letter to Dr. Smith, president of the State board, under the date of January 24, 1903, the secretary reported that from Frenchville to Brownville Junction with all the intervening smallpox camps and infected points was too long a stretch of country for one man, Dr. Nichols, to take care of, that another inspector was very greatly needed there, and that the non-action of the legislature in not promptly providing funds for the State board of health was seriously interfering with effective work. With a considerable number of smallpox patients in the hospital at Jackman, with the supervision of the inspection station on the old Canada road above Jackman, and with many infected camps which required long and frequent journeys, it was not possible to transfer either Dr. Thompson or Dr. Mason from that region. February 11, however, the limits of the smallpox epidemic in the Jackman region were so narrowed that Dr. Thompson was given a few days' rest at home and then sent from Bangor to take charge of the epidemic work on the St. John river. Soon after his arrival, a letter was received from the local board of health of one of the Madawaska towns asking for information in regard to Dr. Thompson's mission. The idea seemed at first to prevail that he had been sent to supplant the local boards of health or to do the work for them. In reply, it was written that Dr. Thompson was sent there by the State board of health "to help you so far as he can, and the best thing for you to do is to co-operate with him and to avail yourself of his help while he is there. So far as he can help, it will be without expense to your town for his services. The State will pay him, but you must supply the vaccine virus needed for the vaccination of your



people and you must help him. Dr. Thompson is under instructions not only to help you, but to require you to do what the law says you shall do when outbreaks of smallpox occur."

The reports of Dr. Thompson from time to time indicated that there was much indifference among the people in regard to the presence of smallpox. Efficient work was accomplished only by persistency, by looking after new cases by the doctor and his assistant, by insisting upon isolation, and by doing the work of disinfection personally or supervising it. Under the date of April 15, he reported that in Grand Isle, the day before, he had found several new cases of smallpox, but the people there seemed unconcerned about the matter. He further reported that he had been trying to induce the town officials to make an order providing for the vaccination of the schools. They had done so in Madawaska making it possible to vaccinate over two hundred children, and many adults had also presented themselves for vaccination after seeing that their children were thus protected from attacks of smallpox.

A letter was immediately written to Mr. Florent Sanfacon, secretary of the local board of health of Grand Isle, urging the local board of health to offer free vaccination at once and to keep the offer open some time, at least until the ground was well settled, and to urge the people to avail themselves of the opportunity to be vaccinated.

During the month of April, most of his work was in the two towns of Madawaska and Grand Isle making his journeys most of the time over roads which he described as in a horrible condition.

On the 25th he came down on the stage to meet the secretary of the State board at Van Buren and was transferred for a few days with his disinfector to Connor Plantation, north of Caribou, from which he was obliged to return to Grand Isle, May 2. After his arrival there, he wrote that he had received a report that smallpox was then present in St. Agatha. He further said:

"I am going up to investigate matters in the morning. The extension of my work to that town will make quite a territory for me to cover, but I will endeavor to undertake it if you think best." Speaking of the mud, he said that in places on the journey from Van Buren to Grand Isle it reached as far as the car-

riage step. There were then also two houses in Cyr Plantation, the plantation north of Connor, which he must visit and disinfect immediately.

In a letter to Dr. Thompson May 6, referring to the wide extent of the field he was covering, it was said:

That the board does not dare to incur the expense of employing another physician constantly in that region; but I would inquire whether you might not advantageously and perhaps economically for the epidemic work have another non-professional assistant if you can find a good man to train in the work of disinfection, etc. You could then get around more rapidly, leaving Mr. Sears in one place and the other man in another place. If you find another man is needed, see if you can find an intelligent and trustworthy one, and hire him at as reasonable a rate as you can—reasonable from the point of view of the State board of health. That means as cheap as you can. I am not, however, anxious for you to get a cheap man at a cheap price. He should speak French.

May 14, the doctor wrote as follows:

The situation is so much improved that unless another epidemic comes over from the New Brunswick side I can manage to get along without the aid of another man. I find all quiet here in Madawaska. To sum up the situation is this: In Caribou a few cases; in Cyr Plantation, two; in Hamlin, none; in Van Buren, a few; in Grand Isle, none; in Madawaska, none; in Connor Plantation, none; in Frenchville, none; and I think St. Agatha has none. However, I am going there this morning and will report.

I propose to disinfect the last house in Grand Isle this week. There are many cases on the New Brunswick side of the river.

In the latter part of May, referring to the exceedingly successful results of Dr. Thompson's work in the Madawaska region, a letter was sent to him in which he was instructed:

Under the circumstances it might be well for you to come down to Caribou soon after receiving this and call me over the telephone letting Mr. Sears (his assistant) come down to Van Buren for further orders. Of course, we wish to have the expense of employing you cease as soon as possible. We must economize all along the line.

Soon after that, the doctor returned to his home and the local boards of health were trusted to do their own work alone with such help as Dr. Hammond could give them from Van Buren. Dr. Hammond had been appointed as an assistant by the Surgeon-General of the Public Health & Marine Hospital Service to



guard against the introduction of infection from across the river and its extension in the border towns.

Some of the difficulties of maintaining efficient work in these towns are indicated by the following letter which was received in August from a citizen of Grand Isle:

Smallpox which has been going on in this territory since last fall has not been curbed yet. The town officials do not seem to want to stop that terrible disease. Though there are now only a few cases, I believe it is going to spread rapidly because the houses in which the disease exists are not closed and persons with their bodies covered with smallpox run about among the people of a neighborhood until the people find out for themselves what the trouble is. A house was quarantined here a few days ago. They had smallpox about two weeks when the house was closed and they had run about during that time. Dr. Hammond of Van Buren closed that house and still they keep running about unnoticed by the officers of the town.

In the early part of September, arrangements were made with Dr. Henry Hawkins of Sullivan to work for the State board of health to prevent the extension of smallpox in the Madawaska region and elsewhere when needed. He reported to Dr. Hammond September 12.

September 22, Dr. Hammond reported: We have at present in Van Buren about a dozen cases of smallpox, all outside of the village. In Grand Isle, there are now something like 9 or 10. The majority of the people are taking more kindly to vaccination, Dr. Hawkins is kept busy investigating suspicious cases, policing quarantined districts, and vaccinating. Four cases were recently reported from Madawaska, but on investigation Dr. Hawkins found them to be pustular eczema. At Stockholm yesterday, I found 3 cases of smallpox.

October 2, Dr. Hawkins wrote:

Yesterday we disinfected the last house in the Madawaska settlement and today the last one in Van Buren. New case is reported in Grand Isle, but the patient went across the river. Am going to investigate the case to see if the house she left needs disinfecting. I found one person yesterday who had been exposed to smallpox and was complaining of backache, headache, and general malaise.

Three days later, he wrote that he is going to Upper Grand Isle to do some vaccinating and to look after that part of the Madawaska region.

The following brief extracts from the various reports from Dr. Hawkins give some slight indication of the character of the work which he was carrying on.

October 12, 1903. There have been 4 new cases within the past week in two different settlements in Grand Isle. The people are taking more kindly to vaccination now and are doing quite a little. I was not able to answer your telegram Friday for I was down to Grand Isle and did not return until after telegraph hours.

October 26. I have today investigated a case that came from across the river. Today Mr. Keegan (his assistant and disinfecter) disinfected a house in Grand Isle settlement. There is a new case to be investigated eight miles from here.

November 2. There are many cases of smallpox across the river in St. Leonards. Dr. Hammond ran into a new case yesterday which he reported to the local board on the other side.

November 9. A case of smallpox in Grand Isle will be discharged from quarantine today. In Madawaska, I have vaccinated as many as I could of those exposed. The people are taking more kindly to vaccination all the while. With reference to the origin of the case in Madawaska, the woman had been an inmate of the St. Basil Hospital and soon after she was discharged from that institution, smallpox broke out. She had a light run. She was vaccinated when a child, but her older daughter was very sick, and her husband is now in the papular stage. As the colder weather comes on, I notice the cases are becoming more severe. At last the people are making up their minds that they do not want smallpox.

Today Dr. Hammond and I investigated the larger number of the houses quarantined. We found 8 new cases in there. There are 2 more cases reported in Grand Isle. The 4 cases in Madawaska are from a hospital across the river. My delay in sending the reports was due to my spending Sunday and Monday either in camp or, as last Sunday, up to Madawaska. Mr. Dufour, the secretary of the local board of health of Madawaska, asked me to come up that I might find the men at home and he wishes me to spend some time at Madawaska in making a canvas of the town and vaccinating the inhabitants so far as I can take the time to do it. The western back settlement in that town and the main road have been pretty thoroughly vaccinated. The majority of the inhabitants in the eastern back settlements are still unvaccinated—persons who would not be vaccinated, but now desire vaccination. Mr. Dufour says, however, that the men wish to wait a little while yet until they get their wood out, hay pressed, etc., about three weeks from now. Mr. Dufour seems inclined to do the right thing, but the selectment are disinclined to pay him for his time spent in performing his duties as secretary of the local board and refuse to pay him for horse hire. I told him that I would pay him for the two times when he had furnished me a team to go into the back settlements, but that I thought the State had done its part when it had sent me into the

town and that the town ought to furnish the necessary teams to go to its different sections when necessary.

It is gratifying to note that the leading lumber concerns are anxious to take the necessary precautions against smallpox, particularly Mr. Collins, the St. John Lumber Co., and Cunliffe & Sons. In talking with Mr. Cunliffe, Monday, he said that their concern wanted to do all in their power to put an end to smallpox, that they would not hire a man that was not vaccinated if they knew it, but that now and then one would get into the crew. Mr. Brown, of the St. John Lumber Co., will not hire a man that is not vaccinated. One got into the mill crew here and came down with smallpox. He had lied about his vaccination. Mr. Brown says that the next man that lies to him will be prosecuted, and the first one that goes to another French dance is discharged the next day. Mr. Collins had me go to his camp a week ago Sunday to inspect a case of severe cold, fearing that the pains were prodromal symptoms of smallpox. I made a canvass of the crew and settlement, vaccinated all of the men who had not been vaccinated except one. This man has been discharged so I have been told.

At Edmundston, Monday, I was told that smallpox had broken out in the Canadian lumber camps on Green River.

In answer to Dr. Hawkins' report of Dec. 9, he was advised that when occasion occurred it would be well to give the municipal officers plainly to understand that "if they do not support the local board of health and it should happen that their local board of health should resign, the State board would hold them personally responsible for work which should be done, and that an order will be issued requiring them to do the work themselves, and probably with not so much help from you as they are now getting."

Dr. Hawkins was granted a few days' rest during the last few days of December. He was then transferred to work in the lumber regions in the central part of the State making his headquarters successively in Patten, Millinocket, Oakfield, and Houlton, the most of the time being in the lumber camps or en route from outbreaks in one camp to another. From January 11 to 24, 1904, it was necessary for him to go to the Madawaska region to help Dr. Hammond and Mr. Keegan who had all winter acted as an assistant and disinfecter for them. Reporting, he said: "Nearly all the people in the town of Madawaska have been vaccinated. Many of the young men are now home from the woods waiting to go on the drive. I have vaccinated many and more wish to be vaccinated on my next trip up there."



Still later in the spring, as the epidemic in the Madawaska region had been so nearly subdued, it became necessary to transfer Mr. Keegan, the disinfecter and assistant, from the Madawaska region to help for a short time in the disinfection of lumber camps in the Millinocket region.

#### MILLINOCKET.

A case was seen in Millinocket April 8, 1903, the diagnosis of which had been in dispute. The man was in a French boarding house where there were twenty-eight boarders and a family of nine, seven of them being children. The patient was in the stage of desquamation, but there was no difficulty in deciding it to be smallpox. Fortunately, the family had all been vaccinated three years before and a part of the boarders were similarly protected. Unfortunately, however, there had been no restrictions on this man's movements, and before they were through with the trouble, they had in the village twenty cases of smallpox with twelve houses infected.

It was found that this man had come from a lumber camp in from Stacyville and the history obtained indicated that several other cases had developed from infection in this camp. One case had gone to his home in Medway where he had developed what Dr. Weymouth said was a typical smallpox eruption. Another case, fully recovered, was in Millinocket driving a team. Another case had, until recently, been in Millinocket, but had gone to Island Falls. The next train was taken to Island Falls and this man was found several miles out from the village at work on a farm with still traces of the smallpox eruption upon him. Dr. Bigelow, secretary of the local board of health of that town, who accompanied me, made arrangements for the vaccination of exposed persons, for the disinfection of the farm house and ultimately for the disinfection of this convalescing smallpox patient. All of the cases had been mild with the exception of the one in Medway which was of moderate severity. The local boards of health of other towns to which men had gone from this infected camp were notified, but it was not learned that any additional cases developed.

Another case appeared in Millinocket in the latter part of August which the local board of health pronounced smallpox and treated it accordingly, although the man, a lumberman, declared he had been exposed to nothing but chickenpox in Bangor. The following history of this case was reported by Dr. Bryant, secretary of the local board of health:

J. D., unvaccinated, talked for some time on August 8 with two men at the Commercial House, Bangor, who told him they had chickenpox. Thirteen days later, on August 21, he was attacked with nausea, extreme headache, "pains in bones," temperature 104° F. August 22, symptoms continued, temperature 104.6. August 23, papular eruption appeared on forehead, face, neck and rapidly spread downward over body. Patient felt very much better though was still somewhat weak. This eruption has appeared in the scalp, on the palms of the hands and in the mouth, as well as on the face, limbs and body. The papules became vesicular and are now becoming pustular.

In the lumber regions around and above Millinocket a plentiful number of camps were infected with smallpox and Millinocket was necessarily the center from which the inspectors of the State board did much of their work.

#### MONTAGUE.

Though outbreaks of smallpox in lumber camps had for some time been feared, the outbreak here narrated was the first which, so far as the State board knows, had visited a Maine lumber camp. October 7, 1902, Dr. G. M. Woodcock, a member of the State board of health, reported as follows to the office of the secretary:

I was called to Montague this forenoon to decide a suspicious case which had been at large for the three days past. Suspicion was awakened last night as to the nature of the case by the physicians who saw the patient. The man is a French Canadian, aged about thirty years, who has been in Townsend's camp at Mattamiscontis, twelve miles from Montague. There are three camps containing in all sixty men who are to be put under nominal quarantine and observation after vaccination from fourteen to sixteen days.

The man's history is indefinite and I could not trace the source of the infection. He came from Salem, Mass., six weeks ago and spent two weeks or more in Old Town, arriving in camp September 19 or 20. He was sick a week before he came out. He claims that he had smallpox when two years old, but has an



old vaccinal scar on his arm. The examination of him disclosed semi-confluent smallpox eruptions in the pustular stage—confluent on the face and discrete on the body.

The selectmen are going to take a house on the outskirts of the town for an isolation hospital. The family with whom the man boarded during his stay in Montague are to be vaccinated and kept under observation fourteen or sixteen days.

I have sent them an immune nurse who fortunately speaks French and have forwarded a Novy lamp, formaldehyde, and vaccine for immediate use.

Fearing that there would be further trouble in that camp, Dr. Bragg of Montague who had charge of the cases was asked to make a list of the names and addresses, or usual homes, of all of the men who worked in that camp and of any other persons who may have come in contact with the smallpox patient. The idea was to be able to trace any man or exposed person who might escape from the camp and go elsewhere. The list was prepared.

October 19, Dr. Bragg telephoned to Dr. Woodcock that one more case of smallpox had occurred at the camp, that the patient had been removed to Montague, and that he also had been put in care of the immune nurse. It was also reported that a panic existed in the camp and that the men were bound to come out to Montague where they could have care if sick, and they did come out in spite of the efforts to keep them in camp.

Dr. Woodcock again went to Montague on the 22d and had a conference with the selectmen and the local board of health. He reported that:

All the men in the camp, 42 in number, had been vaccinated, and that the vaccination of 37 had taken, and the others were revaccinated by Dr. Bragg. The men broke camp on the 20th and on the next day came out to Montague with the exception of ten. Most of these are quarantined in Montague with the exception of two in Lowell and two in Enfield near the village. All are under observation and have not returned to their homes. They are quarantined in an old camp. Their clothing has been fumigated with formaldehyde and each man has had a bichloride bath. The same treatment has been given the others in Lowell and Enfield who are in old unoccupied houses away from their families where they will remain sixteen days from the time they left camp.

No other cases occurred among the men who came from this camp in Mattamiscotis, but two cases broke out in the family

where this Frenchman, who constituted the first case, boarded before he went into the camp. November 22, the final report was received that this outbreak was terminated and that everybody and everything had been thoroughly disinfected.

#### NEW SHARON.

At the request of Dr. Makepeace, secretary of the local board of health of New Sharon, the secretary of the State board went to New Sharon, June 6, 1902. Dr. Hatch, an eclectic physician, about fifty years of age, who occupied a prominent place in the ranks of this school, was found to have smallpox in a malignant form. It had then been six days since the beginning of the prodromal symptoms, and three days had passed since the eruption had shown. The eruption, then in the early vesicular stage, was exceedingly profuse, covering every part of the body and threatening to develop into a fully confluent eruption. Though presenting evidence of serious toxemia, he was able to give me the following story in regard to how he thought he had contracted the disease:

He had attended the meeting of the national eclectic society at Providence, R. I. After the meeting, he went to New York on a crowded excursion boat. In the evening, standing listlessly in one of the gangways, a man passed him almost brushing against him, and as he did so, the doctor noticed that he had an eruption which he took to be smallpox. He did not report the case and did not see the man again.

It was reported that Dr. Hatch was not a believer in vaccination. He told me that he had not been vaccinated since childhood and neither had Mrs. Hatch for about the same length of time. His son, a young man, had never been vaccinated and was attending his father, unfortunately without the protection which a successful vaccination affords. An earnest appeal was made for immediate vaccination, and before I left the house, I had vaccinated both of them though the exposure had been too prolonged to afford much hope that smallpox could be avoided in their cases.

June 15, Dr. Makepeace telephoned to the office of the State board of health that Dr. Hatch's condition was hopeless. At his request, Dr. Mary C. Conant of Augusta was sent the next

day to help him. Dr. Hatch died early in the morning of the 17th. On the 16th, John, who with his mother had been moved out of the village into a house which had been fitted up comfortably, presented the premonitory symptoms of smallpox. His first vaccination, as Dr. Conant reported, took and so did the vaccination made by himself three days subsequently. A sparse eruption appeared on the 18th. The vesicles were very small, many no larger than a pin-head, and even on the 20th, two days after the eruption began to appear, some of the vesicles were turning into pustules. He had the disease in a very mild form and in the opinion of Dr. Conant, though the vaccination was done too late to prevent the disease, it had nevertheless a very marked effect in mitigating its severity. Mrs. Hatch also had the disease in a mild form.

#### OAKFIELD, SMYRNA, AND MERRILL PLANTATION.

About the middle of May, 1902, Dr. Woodcock, member of the State board of health, received a telephone message that Ralph Morton had been exposed to smallpox and had broken quarantine in the State of Washington and had arrived in Oakfield. A telegram was sent the same day to Dr. C. E. Williams of Houlton, asking him to investigate the matter. He did so and found that he had left the camp as had been reported, that the doctor who visited the camp thought the man might have the prodromal symptoms of smallpox, but Morton did not wait to see whether he had or not. Mr. Morton had been successfully vaccinated four years before. Dr. Williams revaccinated him and vaccinated the other members of the family in which he was found, and further reported that he deemed it very unlikely that further trouble would result; but the man was kept in quarantine for a week longer.

The following is the report of Dr. Henry Hawkins, inspector for the State board of health who had charge of the outbreaks of smallpox which occurred in these regions in the latter part of December, 1903, and the early months of 1904:

William Whalen, "Dan Whalen," known as kind of a camp tramp and "hard ticket" generally left Marsh & Ayers' camp January 2, 1904, after taking part in the pounding and beating nearly to a jelly the face of an old and feeble man by the name of

Welch. He came towards Patten as far as Seboeis Farm, then took a back route to Island Falls arriving there January 5. He was in Smyrna Mills January 7th, and went to Fisher's and Morrison's camps the same day. He remained at Morrison's camp until January 19.

January 13, he came down with the prodromal symptoms of smallpox, and broke out on the 17th. He left camp at Morrison's request on the 19th. He called on Dr. Merrill, also at Morrison's request. Dr. Merrill told him that he had never seen a case of smallpox, but should say that he had that disease and that he should go back to camp.

Whalen stayed in Smyrna Mills over night, was out of doors the larger part of the time, but was in the Hotel from late in night until early in the morning. He arrived in Houlton January 21. Stayed over night with a chum (?) of his at his chum's uncle's. He came into the village January 22, and was lodged in the pest house and there the disease ran its course.

Whalen's chum, Jack McGrinsky, lodged with him January 22, was considered a source of infection and was captured, thoroughly vaccinated and placed in the pest house with Whalen. There he remained until his vaccination had proven itself and all danger of smallpox was past.

January 26, I went out to Morrison's camp, Merrill Plantation, by way of Smyrna Mills. There I found a camp of fourteen inmates, nine of whom had never been vaccinated. Four men besides Whalen had left. Two had gone to Island Falls and were quarantined and taken care of there by the local board of health until the period of incubation expired. Two others were at large. I disinfected the fourteen inmates, their clothing and the camp, vaccinated all except one Irishman who refused vaccination. I placed the camp under quarantine. I gave the Chute members of the camp the privilege of going home providing they would remain under quarantine at their own home.

Of the two others at large, they were on the road all they could be. I finally found them one night at 11 P. M., after a seven miles' ride over a logging road, temperature 10° below zero. The only man I could obtain for a guide or driver was one partially intoxicated and said to be slightly *non compos mentis* when sober. I placed a quarantine on these two men.



Of those exposed to Whalen, two Josselyn boys had smallpox at the camp. Two Chute boys had very severe cases at home. John Morrison, Jr., had a light run at Mr. Charles Daggett's in Oakfield. Morrison while in an infective condition broke quarantine twice and infected two other houses in Oakfield.

Because of Morrison breaking quarantine and generally unruly conduct, a warrant was got out for his arrest. But he got ahead of the sheriff and left for the State of Washington. A certain Ed Doherty broke quarantine at Morrison's camp and went to Cary Plantation. A warrant for his arrest was sworn out and he went over the line.

Before and during the run of smallpox in this vicinity, there was an epidemic of chickenpox in Oakfield and vicinity. It was claimed that the source was Monticello.

#### PATTEN.

Patten had no cases of smallpox in 1902, and in 1903 had only a diminutive outbreak. While in Fort Kent May 19, a telegram from Patten was forwarded to me from the State House. The next day on the way down I called over to Patten and found the suspected case to be smallpox. The man had come down from one of the drives. It was learned that on the way down from the drive he had exposed persons at houses where he had stopped. Arrangements were made to have those persons vaccinated as soon as possible. June 9, Dr. Merrill, secretary of the local board of health, reported that he had discovered another case of smallpox and that he had traced it directly to the first case. "The man left Hewes' drive about the time the first case did and went over to Tozier's drive on Satto Brook and came from there to Patten last Saturday. This second man escaped vaccination by changing from one drive to another just when he did. I have to go in and vaccinate Tozier's crew of twenty-five men." A third case occurred the very last days of the year. This case was seen by Doctors Varney and Hawkins, inspectors of the State board of health.

## PRESQUE ISLE AND THE SURROUNDING TOWNS.

December 31, 1902, a telegram from the local board of health of Presque Isle read: "Case of suspected smallpox. Come soon as possible." It was impossible to comply with the request. Two days later another telegram from the same source said: "Convinced we have a case of smallpox. You must come at once. We insist." The answer to the local board was: "Impossible now. Must go elsewhere. Simply follow Circular 71. Other places worse off."

The following letter went to the local board: Upon receipt of this kindly let me know what special trouble you have with the one case of smallpox and we will consider whether under the circumstances we should and can send a man up there. It is not safe on account of the continuous calls for advice which I have over the telephone and otherwise every day from many directions in the State to be gone long from the office, as long as it would take me to go to Presque Isle and return. I can catch time to make an occasional rather near call as I was obliged to do today in going to Shiloh where they now have six cases, one terminating fatally today, and three hundred or more persons congregated in those buildings. In the outlying districts of the State, we have just now four physicians and four nurses at work as I think I wrote to you before. In view of the fact that we have more than exhausted the funds at our disposal, I was instructed a few days ago that the towns and cities must in most of the cases for the present make their own diagnoses. We have endeavored in the past to respond promptly to every call of that kind, but there are more such calls now than we can attend to. That is a plain statement of the situation and I regret our inability to help every town which needs help of this kind. The northern part of the State, I fear very much, is going to have much trouble with smallpox, but we are doing all we possibly can to avert that danger by soliciting the cooperation of the Provincial board of health on the Temiscouata Railway, by our medical inspectors who are tracing out every infected camp, vaccinating the men, and quarantining in small special camps all cases of smallpox found. We have been doing that and have succeeded in holding the men in every infected camp save one up in the Northern Maine wilderness, and that exception was due to the fact that the boss undertook to dispute the diagnosis of our inspector and kept the sick man in the camp a day or two, and long enough to scare the men who fled to Canada. Our chief inspector has now gone up from Fort Kent to the Seven Islands region. I should guess that the case which you have came out from that way, and I would advise you to be on the

lookout constantly for additional cases. Some of the cases are severe enough and many of them are so mild that there is much danger of their passing for chickenpox. Let me know just what your conditions are and I shall be very glad to help you so far as is possible.

(Signed)

A. G. YOUNG, *Secretary.*

Instead of the presence of only a single case the following letter under date of January 6 and signed by Drs. McNamara and Boone presented the matter in a more serious aspect:

In regard to our smallpox situation we have just made a tour of the town and find six houses infected, every member of these large families either having had the disease or just having it. The type is very mild, only one person seriously sick. We wish you could send an expert to assist us in the confidence of the people as to correct diagnosis. This disease is undoubtedly all over the adjoining towns as we hear from it nearly every day. It will be very hard to stop it now as it is impossible to tell who has been or, rather, who has not been exposed. We will do the best we can, but for heaven's sake and for our sakes, send a man as soon as possible.

Dr. H. A. Milliken of Hallowell, was immediately sent and Dr. Nichols, chief inspector of the board, who had been wired to go there as soon as he could be spared from Van Buren, arrived in Presque Isle the same day. The diagnosis of smallpox was confirmed. There were then 24 cases in Presque Isle. Drs. Nichols and Milliken divided the territory and rapidly investigated the surrounding towns. In rapid succession reports came in that smallpox among the surrounding towns was in Mapleton, Washburne, Perham, Woodland, and Wade Plantation, and that it had been in these towns some months.

January 17, the secretary of the State board of health held a conference at Presque Isle with representatives of the local boards of health of that town and of the surrounding towns. At this conference some of the questions considered were: Vaccination—house to house, certificates; quarantine of persons, of houses, of districts, and of town against town; disinfection; treatment of mail from infected places; inspection of railroads.

The work of disinfection ahead of the local boards of health was to be done in the dead of winter with a depth of snow unusual and in a bitterly cold atmosphere. The disinfecting of rooms, their inhabitants, furniture, bedding, clothing, etc., could not be done all in one job. The bedding and clothing should be

removed from the rooms and disinfected outside, meanwhile the members of the families should have a disinfecting bath and the rooms should be disinfected. Outside, chemical disinfectants would have little action at a low temperature. It was extremely important that trustworthy work be done.

An outline of the only plan of work which would be satisfactory to the State board of health was that each infected town should build a transportable disinfecting booth in one end of which should be a door and in the other end of which there should be an air-tight disinfecting cabinet or closet, the entrance to which should be from the outside. The disinfecting booth should be heated with a small stove and should be six inches wider than the disinfecting cabinet which was thus to be surrounded on three sides by the air warmed by the stoves. A plan was submitted. Two good intelligent men were to be employed by each town, one to help the family in the house and to place the infected bedding, clothing, etc., in the disinfecting cabinet, the other to operate the Novy formaldehyde generator from inside the booth, and in due time to remove the disinfected articles and to return them to the rooms when the rooms were ready for them.

On the part of the State board of health it would furnish a trained disinfecter to work with each disinfecting gang a few days and teach them how to do the work. The representatives from each town agreed to this plan. Preliminary arrangements had already been made with Mr. E. R. Bean of Augusta, sanitary inspector for the local board of that city, to go immediately upon notice. He went up the next day.

After returning to the office the following letter was sent to the secretary of the local board of health of each infected town:

As you of course understand, it will be very greatly in the interest of your people to stamp out, in the shortest possible time, the epidemic of smallpox in your town. That this may be done, and done so that there may be the least danger of recurring outbreaks in the future, the State board will insist upon the following measures:

That your local board of health make, as soon as possible, an inventory of the houses in your town in which cases of smallpox have occurred or in which persons have visited or called who have had smallpox recently or some time previously, or who have come from houses in which there have been cases. The list of



infected houses must include all which may have in any way received the infection of the prevailing disease under whatsoever name it may have been called. This inventory can best be made by the vaccinating physician.

That the house to house vaccination of all the inhabitants of your town be completed as soon as possible. Unvaccinated persons and persons from unvaccinated families cannot be considered other than as dangerous persons from whom the restrictions of travel cannot so speedily be removed as from those who are vaccinated.

That every infected house, whether the infection occurred recently or months ago, be disinfected in a trustworthy way, and so that the work may be satisfactory to the local board of health and to the inspectors or agents of the State board.

That within your own town the greatest care be taken to avoid the further spread of infection from house to house until every case has fully recovered, and every person and house has been disinfected. The work of cleaning up the epidemic will, of course be done at the expense of your own town. The help given you by the State board, its inspectors, and agents, will be at the expense of the State.

The State board would recommend that persons who, with their families, have been vaccinated, and whose homes have not been infected, be furnished with a certificate or pass such as is herewith attached, and that persons from infected houses be supplied with such certificates as soon as all persons in those houses have fully recovered and disinfection has been done. You are further advised to make arrangements with the local boards of Caribou, Presque Isle, and other towns in which the citizens of your town do business, so that these certificates may be honored by those boards.

Mr. Bean soon reported that the local boards had good men to aid him. He made the circle of the infected towns, instructing each disinfecting crew, then made a second tour of observation and returned after three weeks' service.

Notwithstanding the fact that in some of these towns the number of houses already infected when work was begun was fifty or more, the epidemic was stamped out in a remarkably short period of time.

The history of the origin of the outbreak which prevailed in these towns appeared to be this: Two men had been across the line. They returned together, one staying in Easton and one going to the edge of the town of Washburn. The Easton man developed symptoms which Dr. Dilling of that place thought indicative of smallpox. At his request, July 16, 1902, the State

board sent a medical inspector to see the man and found him to have smallpox. That case was properly taken care of and no one else was infected. The man who went to Washburn also became sick. The physician called to see him was suspicious of smallpox and called in consultation a physician from Massachusetts then visiting in an Aroostook town who claimed to have had an ample experience with smallpox. He pronounced it chickenpox and apparently from this case the epidemic arose which covered several towns and plantations and was carried to many lumber camps in the Fish River region. In most of the cases the disease assumed a very mild form and it appeared that at first the extension of the infection was slow.

#### SEVEN ISLAND REGION.

December 20, 1902 a telegram was received from Fort Kent that smallpox was in some camps "on ranges 15 and 17." The numbers of the townships were not given. It was very confidently assumed that the outbreak of smallpox on the North Branch of the Penobscot had been heard of on the upper waters of the St. John whence the news had been carried down the river to Fort Kent. It was several days before more definite information could be received. Then it was learned that the cases were in the Seven Islands region on the head waters of the St. John.

The route from Jackman down the St. Lawrence river thence in by the way of St. Pamphile, Quebec, was first considered, but the route from Ft. Kent up the St. John was chosen. Dr. Nichols was sent. A formaldehyde generator and a supply of formaldehyde were sent from Bangor direct to Fort Kent and 600 points of vaccine were sent in care of the Bangor House at which point the doctor expected to arrive in the evening of December 26. But the Canadian Pacific train was late, the doctor had to remain in Brownville over night, and another annoying delay of a day in Fort Kent waiting the arrival of the vaccine virus which was mixed up in the holiday jam of express matter at Bangor and could not promptly be found and forwarded to Ft. Kent.

January 3, 1903, Dr. Nichols returned to Fort Kent from which he telegraphed his arrival and reported by letter as follows:

I am just back from an extended cruise across the continent. I started out from here with a two horse team and went up the Allagash region, visiting all the camps along the way. I did not find any trouble until I reached, or got about to Seven Islands, which is eighty miles from the Fort. I found a camp with twenty-one cases in near that point. Some of the men were pretty severely sick. I fixed them up the best I could and drove on thirty-five miles farther to Morrison's Camps where in four camps there are between two and three hundred men. Here the d—I was at work, one camp of fifty-four men had twenty cases, another eleven, another three. I found a house about eight miles this side of the line, where there were four cases. These cases came in from L'Islet county, by the way of St. Pamphile. I fixed up things the best I could, but without more formaldehyde I could not do much. I have a house for the men, some of them are very sick men.

I shall take a physician in from here and place him at Morrison's Depot Camp which is near the line and is the only road in from Canada to that district. They are having smallpox all through L'Islet county, and it is very important to keep this place closed until the lumbermen get out of there. There are so many lumber concerns in there that it is a very important place to protect. I have found a very capable physician to take the place. I shall take a nurse in with me to help him. These camps must all be cleaned up before the drive or we will have smallpox all through the State. I think we perhaps better place another physician at Allagash which is twenty-seven miles up the St. John. I shall go in to Morrison's and help to get more straightened out before I leave. I hope those things I wired for will come Monday, for I am so irritated to be staying here when there is so much to be done. It's a mighty big job things have gotten such a start. But I'll clean it up or bust.

I shall be here another week at the outside. I came out from St. Pamphile by the way of driving to St. Jean Port Joli, a distance of 35 miles. I then took the T. C. R. to Riviere de Loup, and then the Temiscouata R. R. to the Fort. I shall go back that way for it is easier and cheaper. I drove in all: eighty miles to Seven Islands, twenty miles to Morrison, six to this depot (the line) and thirty-two miles to St. Jean Port Joli, quite a drive. I let my team come back, he gets here Monday night.

(Signed)

ESTES NICHOLS.

Dr. Nichols did not return to the upper St. John region. He was needed in other directions in Northern Aroostook and Dr. E. T. Flint, of Fort Kent, was sent to take charge of the Seven Islands outbreak. The following extracts from telegrams and letters from and to the office of the State board of health indi-



cate in some degree the character of the work done in the Seven Islands country and some of the difficulties in doing it. Most of the correspondence and supplies went by the way of St. Pamphile, Canada.

January 12, 1903. Please report to this office the condition of things up where you are and instruct me how I can send in supplies to you most conveniently. Could I not have them sent up from Fort Kent by the tote teams?

I expected to send Dr. Nichols up with you before this time, but there is a bad condition of things in the towns around Presque Isle, and he must stay there a little longer. Several of the towns in that vicinity have had smallpox for some time.

(Signed)

A. G. YOUNG, *Secretary*.

January 12, 1903. Your telegram at hand. Am at Morrison's Depot Camp, T. 15, R. 15. Find Morrison's Camps and that of Estabrook, T. 14, R. 16, to be free of the disease, as is also that of McCollister, T. 15, R. 15. Have not been in to Hopkins's Camp yet, T. 13, R. 16, but understand that there are four or five cases there recovering.

At Porter's Camp, T. 15, R. 15, there are some ten or twelve cases all recovering and at work. Have vaccinated twenty-nine who have not had it, or who show no signs, but Porter will not submit and the remainder also refuse.

Have two cases in a pest house here, one of which is completely covered, and though now beginning to recover is still in a serious condition. This is the worst case I have seen here. There is a case quarantined at home on Big Black river (in T. 14, R. 16, as near as I can judge it). This man's name is Tom Fornier and his is quite a severe case. It is about the 12th day of it. The rest of the family have had it and recovered.

The blacksmith here at the Depot Camp is recovering and at work. He has but a few spots and while I have not got him quarantined he is isolated and working alone. His loss would mean a serious inconvenience to Mr. Morrison, hence this arrangement.

As fast as I can vaccinate and clean up I fumigate but in the case of Porter I hardly know what to do. There are no Americans in this camp, all Canadians and French from St. Pamphile.

It would be pretty hard to quarantine the cases here as they are all working and would refuse to lose their time. I think it would require force. However they might be sent into Canada.

Part of my virus was lost in transportation between here and Riviere du Loup hence my request for more.

Fully one-eighth of the houses in St. Pamphile contain this disease in some form and the authorities on that side can do nothing. At church one can see it generally sprinkled through the audience.



Shall move on to Stevens's operation as soon as I get things shipshape here and see what he has. He is in the neighborhood of the Seven Islands, but am unable to state township and range.

A telegram from you would be very acceptable with some definite instructions concerning Porter and his camp.

(Signed)

E. T. FLINT.

January 16. Am having good success with the cases here and, judging from Mr. Morrison's operation, I think that I shall not require any assistance unless you deem it necessary. I have a very efficient man to help me, one who speaks French fluently and is not afraid of work, besides being thoroughly conversant with the geography of this section.

I find so far that with two exceptions the disease here is in a very light form and there are no new cases coming down with it; all are nearly recovered on this operation except, as I say, these two cases. One is in the pest house and the other quarantined in his own home.

The men are taking more kindly to vaccination now since I have promised to send the names of all not vaccinated to the authorities in the Province whence they come. The French do not give me any trouble to speak of.

Two of Morrison's camps are free from the disease and have been from the first; two have had it and a few men show traces of it here and there, but it is practically all gone. All are at work and I consider past the stage when it could be transmitted. Only four of the men on this operation came from the states and those I vaccinated before I let them go in. All told probably there have been twenty cases of it on the operation.

I have it on good authority that Stevens's operation had some twenty-one cases, but all are now at work. Mr. Stevens himself assured me that he had had none, but he was biased. I think I can get to him about Tuesday or Wednesday to see how matters stand and do some vaccinating. Am well equipped to combat it having taken a supply of medicines from Fort Kent. This I knew to be the quickest way to get them.

Kilbourne is reported not to have any cases in his camp but shall investigate that soon after I do Stevens'. Have plenty of formaldehyde, virus, etc., at present. It would not be practicable to send supplies by tote team from the Fort. I think the quickest way would be via Riviere du Loup. The virus came tonight.

(Signed)

E. T. FLINT.

January 19, 1903. Answering yours of January 12, I would say that I do not see much chance for you to do anything with Porter unless you can talk him into vaccination, make him see that it will be for his advantage to be vaccinated and to have his men vaccinated. I presume you have talked that to him already. You say that his crew are all Canadians. Who is he, and where

does he belong? It may be that I can work through the Provincial board of Quebec so that they may require the vaccination of these men before they are allowed to come out to the settlements. That is what we shall require of all men whose homes are on this side of the line, and I think the Province of New Brunswick will make the same requirements.

I went up to Presque Isle Friday, the 16th, and returned to the office the next day. In some of the towns west and north of Presque Isle, smallpox has been present for several months. Those towns are now under partial quarantine and we are making arrangements to disinfect all infected houses and their contents, and infectious persons and then give each person thus cleaned up a certificate like the one which I herewith enclose. We must put into operation some such plan for all of the men up your way whose homes are down the river. Before it is time for the operation to break up, I hope that we can have the disease pretty well cleaned up, up your way and we shall try to do the same in the organized townships in northern Aroostook.

(Signed)

A. G. YOUNG, *Secretary*.

January 20, 1903. Have vaccinated all possible in this operation and fumigated camps. Out of 45 men in Estabrook's camp I failed to get some five or six, and out of some 50 men in Hopkins's camp I failed to get about fifteen. I have the names of all men vaccinated and also those who are not. I used all means in my power to get them to be vaccinated, even carrying the priest out there.

I have worked up a little public spirit in St. Pamphile and they are co-operating with me to what extent they are able. This is purely a local affair and not done by any Canadian board of health.

(Signed)

E. T. FLINT.

January 22, 1903. The State board of health will, if the legislature supplies it with ample funds, establish an inspection, quarantine, and disinfecting station pretty well down the St. John, probably at the mouth of the St. Francis, for the purpose of detaining temporarily and inspecting, vaccinating, and disinfecting all the men who come down from the main St. John, from the Allagash, and from the St. Francis, irrespective of whether they have been at work on the Canadian or the American side. I shall ask the Provincial board of health of New Brunswick to co-operate in this work. Meanwhile we want you to clean up the trouble there just so far as you are able to do; vaccinating all the men if possible, and do the disinfecting as thoroughly as you are able to do. We hope that by thus doing there may be no cases of smallpox left when the operations break up.

We probably shall immediately make a special order and send it up in the form of a poster which you can post up everywhere



on both sides of the line, requiring all persons who wish to come down the river to their homes or other places in the State of Maine to be vaccinated, present themselves to an inspector of the State board for disinfection, and then to receive a pass or certificate showing that they are all right. The notice will state that persons not complying with these requests will be liable to arrest and quarantine in any town or place in the State of Maine to which they may go. We have written to the secretary of the Provincial board of health of Quebec telling him about these proposed arrangements and inviting his co-operation as regards the men whose homes are in the Province of Quebec. I have also invited him to send an inspector over to consult with you if he wishes to do so, and I have also written him that we shall be pleased to have him establish an inspection system on either side of the line which would be advantageous to him if he wishes to take precautions against the transportation of infection into his province. If you will thus co-operate with us it will make our work easier.

I wish you would make as accurate a list as possible of the names and addresses or homes of all the men in all the camps that you can get at, whether they belong in this State or Canada. A list of that kind will be of great service to us later. Perhaps it may be better to make a separate list for each camp or each operator. If you will send down such lists as fast as you make them out, I will have them typewritten and send a copy up to you.

I presume that at the camps you are not required to pay your board. The operators I think should deem it a privilege to board you and take care of you as well as possible, and to furnish you with a team or transportation facilities from camp to camp.

(Signed)

A. G. YOUNG, *Secretary.*

February 2, 1903. Have just returned from the Seven Islands where I have covered Stevens' and McCollister's work. Am unable to give you the townships and ranges but all the camps are within a radius of 20 miles. Stevens has one camp where about 20 men have had smallpox, six having escaped having it owing to previous vaccination. This camp I fumigated though some men were discharged before I got there.

Patterson had none but I fumigated there as there were evidences of suspicious persons having stayed there over night. I also vaccinated most of his men. Stewart's camp had a few cases and I fumigated that and vaccinated the men.

On McCollister's work I vaccinated. McGuire's I fumigated as there was suspicion that it might have been exposed. I also vaccinated all. At McCollister's I vaccinated only as he had been very careful, (McCollister has charge of a camp for his brother). At Nelson's I found three cases and vaccinated the

remainder. This camp is removed 16 miles from the nearest camp and I have left the men there as they are working and nothing short of arrest could get them out into a quarantine station. The portager leaves the supplies a mile this side the camp and the scaler and all others have notice not to enter and the mail is disinfected. I wished for instructions regarding the disposal of these men so wired you. I believe there are seven or eight men there who have recovered. All remaining to be done at the Seven Islands is to fumigate where the three cases now are at Nelson's as soon as they reach a stage where it would be desirable. Fornier is up and recovering but his face will be badly scarred. His was a serious case. In two weeks or so that place should be fumigated.

Now a few words about Morrison's operation. I left Porter's cook in the pest house when I went to the Seven Islands with arrangements made for all supplies, etc., and while I was gone, having stated that I would return in a week, Porter *took him out* and set him to cooking again. I immediately went in after him and got him part way out when Porter met me with an axe, took the horse's bridle and the cook got away from me and behind Porter who kindly offered to open my cranium if I interfered. I am not aware of having any authority to arrest anyone, so I made the most of it by telling Porter that he was laying himself liable to arrest and prosecution, and he said he knew it, but he "would have his revenge on the French ——." It seems that 30 men left when I first came up because Porter kept the cook at work all covered with vesicles and when I took him away they returned and now, it being most time to discharge the crew, he wanted to get back at them by putting the cook in again before they left. Well when I removed the cook the first time I vaccinated and fumigated and gave certificates to that effect and Porter has wilfully exposed them again and that just before he intended to send them out into all parts of Canada.

I asked him to keep the men a few days till I could get in and fumigate again and even offered to pay their board if he would do so, finally he consented to keep them three days at Morrison's expense, but this morning, while I was at Estabrook's he sent ten of them out against my orders, and in his promise and Mr. Potts's (Morrison's foreman) promise. Now this was due to nothing but pure cussedness. The cook is now in the pest house and under guard. They are not friendly toward me here though till yesterday they have kept it covered up and have made it as hard as possible for me from the first. If anything can be done about this Porter I should advise that he be made an example of for the benefit of preserving respect for the State in future occasions of this sort as they are bound to occur owing to the presence of smallpox in St. Pamphile all the year



round. Stevens and McCollister both have co-operated with me to the utmost, but as for the above you see Morrison's views in the matter.

(Signed)

E. T. FLINT.

February 7, 1903. In regard to the cases now in this locality, there is but one which will finish desquamation in two weeks at the most. This is Fornier; he is at home and around the yard. This case is all that keeps me here and I have made arrangements with the chairman of the local committee on "Pecote" in St. Pamphile to go out and fumigate them in two weeks. This will save the State some money and he will do it in an efficient manner being postmaster here and a reliable man. He furnishes formaldehyde and does it all for \$3.00. I am getting short of formaldehyde but think I have enough for two other camps which I shall fumigate on my way out.

Shall wait till I get the printed matter you mention before starting to the Islands. Stevens probably has the most Maine men and what he has and the majority of New Brunswick men will go by way of Cunliffe's Camps down the Allagash, and thence down the St. John. All who do not go this way will go via St. Pamphile and the Intercolonial from St. Jean Port Joli.

(Signed)

E. T. FLINT.

The printed matter to which the doctor referred was the following special order:

#### SPECIAL ORDER OF THE STATE BOARD OF HEALTH.

By virtue of the authority conferred upon the State board of health in Chapter 305, laws of 1893, the following rules and regulations are made:

Section 1. No person from the Seven Islands region, or from any other place on the head waters of the St. John river, or from any lumber camp between the St. John and L'Islet county in the Province of Quebec, shall come across to the Allagash or down the Allagash tote-road to the mouth of the Allagash without the written permission of a duly authorized agent or inspector of the State board of health. Men who have been at work in the woods on the head waters of the St. John must, if they belong down the river, come home by the way of the Intercolonial and Temiscouata Railroad.

By order of

STATE BOARD OF HEALTH.

AUGUSTA, ME., February 16, 1903.

Notwithstanding the large percentage of smallpox on the headwaters of the St. John, the camps in all of the Allagash region had escaped and there had been not a case there. It was at first planned to establish an inspection station at the mouth of

the Allagash for the final treatment of the men who expected to come home down the river. There were, however, but few men at work on the upper St. John whose homes were in Maine, and it seemed very undesirable to let these few men travel down the Allagash, staying necessarily at camps along the river which had thus far remained uninfected. It had been learned that smallpox had been present in camps on the St. Francis waters. From these camps the men could go to their homes in Maine or in New Brunswick by coming down the St. Francis or by crossing over to the Temiscouata Railroad thence to Edmondston. The only way to safeguard the municipalities in both Maine and New Brunswick would be to place an inspection service on both these outlets.

In this work the co-operation of the Provincial board of health and of the Public Health and Marine Hospital Service had been secured. The Provincial board put an inspection service on the Temiscouata Railroad and the United States authorities placed an inspector and assistant at the foot of Glazier lake near the mouth of the St. Francis, while the State board of health put a guard on the road from the Seven Islands region to the Allagash.

One operator whose home is in Northern Maine wished the requirements of the special order waived in his favor. To him the following letter was sent:

March 3, 1903. If we let the men from your camps come down home by way of the Allagash all of the men in the Allagash camps must be considered infectious, and the State would be to the great expense of putting on an inspection service at the mouth of the Allagash for the purpose of halting all of the men from the Allagash camps, disinfecting them, etc. As this would cost the State and cost operators and the men on the Allagash camps much more than the extra cost for you to come home by the way of the Intercolonial and the Temiscouata, this board feels obliged not to grant your request and not to send you a written permission to come down the Allagash.

(Signed) A. G. YOUNG, *Secretary*.

In answer to a second letter from him the following was sent:

March 16, 1903. I would say that I, from what I have been able to learn, can see no good reason to change my mind in regard to the matter. Various persons working in the Seven Islands region have in the past come home by way of the Intercolonial and Temiscouata, and apparently preferred to do so.

The inspection station on the Temiscouata near Edmundston is just the thing which we wish you to encounter so that if the clothing of your men is infected, it may be disinfected before you are allowed to proceed further. This inspection station of the New Brunswick authorities was put on in co-operation with the State board of health of Maine and the authorities of the United States government. You will encounter no more difficulty in passing that station than you would in coming down the Allagash if it were deemed best to incur the expense of maintaining a quarantine station at the mouth of the Allagash.

(Signed)

A. G. YOUNG, *Secretary.*

#### SHILOH.

To our exchanges outside the State, it seems necessary to make the explanation that in the town of Durham there is a somewhat distinctive colony, or religious sect, or bible school from which teachers, evangelists, or missionaries are sent to various other parts of the world. One of their characteristics, as the experience of the State board of health developed, is that when exposed to smallpox infection or the danger of smallpox infection, they prefer to trust to the protective influence of the Lord instead of to that of vaccination. Aside from this characteristic of this sect, which made much unnecessary trouble for the State board of health, for the local board, for themselves, and for the people of various other places to which their infection was conveyed, they were found to be all right and trustworthy. There was no need of placing guards around their establishment. If they promised to do anything, they did it.

In the evening of February 10, 1902, Dr. Smith, president of the State board of health notified me that in his city, Portland, a Shiloh evangelist by the name of McKenzie had been quarantined by the local board of health on account of having smallpox, and that another man who had been with him had returned to Shiloh. I was further notified that missionaries from Shiloh were to hold meetings in Brunswick the next day. At Brunswick, I stopped off from the first train the next morning to warn the secretary of the local board of health to be on the lookout for persons from Shiloh and to prevent them from holding meetings. At Lisbon Falls across the river from Shiloh, members of the local board of health met me. At Shiloh, all of the



sick ones were quartered in the building which is called Bethesda. There I found one man whom a physician had seen a month ago who thought he had smallpox. As the period of desquamation was nearly complete, the only lesion left which enabled me to make a diagnosis of smallpox in his case was one of the hard and very characteristic plaques on the sole of one foot. Another patient became sick January 25 and another who was taken a day or two later had very characteristic smallpox crusts. Her child, two or three years old, had a few papules on the face and fewer on the body. The local board of health under the advice of the State board quarantined the whole establishment. Arrangements were made to meet the local board of health at noon next day. On the next day, at the appointed time the president and secretary of the State board met the local board of health of Durham, at Lisbon Falls, and Shiloh. Dr. Smith saw all of the cases and pronounced them smallpox and found one additional case, a young lady who had meanwhile been removed to Bethesda. The people at Shiloh were urged to be vaccinated and were told that if vaccinated, it could pretty confidently be promised that there would be need of quarantining them for not longer than about two weeks if the thorough precautionary work which was advised was carried out to the letter. It was, however, found impossible to bring about vaccination. They did, however, carry out carefully and efficiently all of the other measures which the State board and the local board advised—the prompt isolation in the building, Bethesda, of all suspects and of all cases of smallpox, the disinfection of all exposed or infected persons and articles, using for the disinfection of the clothing and bedding, an extemporized steam disinfecting chamber into which steam was run from the steam heating plant of the building where the smallpox patients were. Arrangements were made so that a man specially trained in the work of disinfection was sent to show them how to do this work and to work with them for a few days.

On the 17th, another visit was made to Shiloh and two new cases were found in the papular stage, making seven cases to that date. On the 21st, two more cases had developed and on the 24th, another. The fourth visit was made to Shiloh March 11. Among other things considered was what should be done with



the paper which is published in the establishment, the last number of which was piled up awaiting the orders of the health authorities. It was deemed unsafe under the circumstances to permit the mailing of the paper at that time; but the assurance was given that, after the outbreak was all over and they are released from quarantine, some way could probably be devised in which the papers may be disinfected without injury to them.

After the cases which were seen at the third visit, the visit of February 17, subsequent cases developed as follows:

February 21, Miss C. and Mrs. W. developed smallpox in Bethesda and about the same date Mr. Becket who was in Portland with Mr. McKenzie developed the prodromal symptoms of smallpox and had a few scattered smallpox lesions. February 27, Mr. M. in Shiloh extension, a part of the main building was found to have smallpox and was removed to Bethesda. March 3, Mrs. W.'s baby, only a few weeks old, was found breaking out. The baby had been with its mother constantly. About the same date, one of the young ladies in Shiloh extension was found quite fully broken out with smallpox and was transferred to Bethesda. With cases recurring as they had, some of which had been found in the main building, it was not considered prudent to release any part of the establishment from quarantine until April 14 when, no new cases having occurred for about three weeks, the main building was released from quarantine; but the quarantine upon Bethesda and the Holland cottage remained. It was not until the early part of May that the three remaining patients in Bethesda were found to have passed through the period of desquamation so that it was safe to release this, the last building, from quarantine. The main building was therefore under quarantine a little over two months and Bethesda remained quarantined for nearly three months.

In the latter part of the same year, smallpox again struck Shiloh. December 15, Mr. Libby, secretary of the local board of health, reported over the telephone a suspected case of smallpox. Quarantine had temporarily been put on. Dr. Milliken of Hallowell visited the case. His report was as follows:

Mrs. J. and her husband, both colored, had been doing missionary work in Brooklyn, New York. Two weeks tomorrow came down from New York on the Fall River boat to Boston, and from Boston to Portland by boat. On Tuesday last, the 9th,

was taken ill with headache, back ache, pains in the extremities and abdomen, restless, and with considerable fever. These symptoms continued Wednesday, and on Thursday an eruption appeared on the face and wrists extending over the trunk and body, and finally over the legs and feet. On Sunday, they became suspicious of the case being smallpox and isolated it in a cottage apart from the rest of the buildings. At present the eruption is partially confluent on the face, very profuse over the entire body and extremities. In the palms of the hands the eruption can be distinctly felt beneath the skin as hard, nodular kernels. In the soles of the feet, the eruption cannot be felt on account of the great thickness of the skin in that part. There is a considerable eruption on the hard palate and marked symptoms of eruption in the respiratory tract. There is considerable prostration, and tenderness is present on all parts of the body. At present the eruption is in the vesicular stage, but rapidly becoming pustular on the face and upper part of the body.

On Sunday (2 days before) as the case seemed suspicious of smallpox, it was isolated in the cottage which is divided into two parts, a northern and a southern part. The door between the two parts is sealed tightly. During the time between Thursday and Sunday, thirteen people had visited the woman. These people were promptly isolated in the northern part of the house. The annex where the case was taken from is situated on the western side of the main building and is arranged in suites. On removal of the case from the suite, it was immediately closed and they proceeded to obtain disinfectants, and as soon as these arrived, the place was thoroughly disinfected.

A quarantine was advised to be placed on the cottage where the suspects and the isolated cases were, and all public meetings held at Shiloh discontinued; that none of their missionaries should go out holding services until the period of incubation had passed, and that they mingle as little as possible with people from the outside until all danger from infection had ceased.

To complete our history of this case, it may be added that this woman died January 5.

The next morning the following letter went to the secretary of the local board of health of Durham:

I think that you understood me over the telephone last night, but I deem it best to put my recommendations relative to Shiloh in writing so that you can have them to refer to.

Your action in quarantining the case of smallpox in the cottage and isolating the thirteen exposed persons meets with my approval.

Dr. Milliken's advice that all public meetings held at Shiloh be discontinued and that none of the missionaries or teachers from Shiloh be permitted to go out to hold services elsewhere for the

present is also approved, and I think that in addition to those recommendations, the safest way would be for you to have the whole establishment practically quarantined until the full period of incubation has passed, fifteen or sixteen days I think it would be best to call it. That would carry their period of isolation to about the last of this month. If new cases should occur, it might require a further extension of the time.

Last evening Mr. Gleason was talking with me over the telephone. He told me that they had found six other persons who had been inside the suite of rooms which were occupied by Mr. and Mrs. J., and had therefore in some degree been exposed. I advised him to isolate them until the period of incubation had passed, that is, until we can determine whether possibly any of them come down with smallpox. It would be better, of course, if they could be isolated outside of the main building, but if any better arrangement is not practicable, and it did not seem to be so while talking with Mr. Gleason, I advised their isolation in a separate suite of rooms in the main building for the present. I also advised a temporary barracks somewhere outside to be constructed for the reception of any of those six persons or of other persons who develop the least suspicious symptoms; temporary barracks to be constructed of rough boards and covered with a shed roof of boards. Large wood-burning stoves could be put up so that suspects or persons sick with smallpox could be kept comfortable. The cracks through the boards admitting air for ventilation would be an advantage. I think that you would better talk with them and advise them to have this done immediately so that such accommodations may be ready if they are needed.

Better have arrangements made so that a few persons who may need to do so, may be permitted to go over to Lisbon Falls on business without having all of the occupants of the main building running over there. I told Mr. Gleason that I would ask you to show him my letter to you. Please do so.

December 27, a cautionary note was sent to Mr. Libby, the secretary of the local board of health:

It is high time now for you to be having the secondary cases there at Shiloh. Kindly keep watch for the early symptoms of such cases, and please let me know if any further trouble occurs. I have been so tangled up with smallpox matters way up in the woods from Jackman up towards Fort Kent that it has been impossible for me to give you so much thought as perhaps you should have.

January 2, 1903, the following report was received from the secretary of the local board of health:

I received word last night from Mr. Gleason by telephone that they have five more cases of smallpox at Shiloh.



They let the people out of the cottage that was quarantined at the end of fourteen days except Mrs. J., and those that were taking care of her.

Yesterday or the day before those that had been let out of the cottage began to show symptoms of smallpox, and last night they were sure that they had five more cases. They have put them back into the cottage and quarantined them except two that they were not sure about, and they are shut up by themselves.

The secretary of the State board of health went to Shiloh again on the early train the next morning. There were then five secondary cases. These new cases were all among the persons who had been exposed to Mrs. J., and had been isolated in the northern half of the cottage in which she was quarantined.

New cases including that of the daughter of Mr. Sanford occurred until the latter part of January when there was a lull for some time. Each time these periods of considerable length occurred without new cases, there was the recurrence of the question of how much longer the quarantine should be maintained. During the first of these lulls, the secretary of the local board was advised as follows:

As long as Shiloh remains unvaccinated, your town will have a troublesome problem. If they should go a week or two longer with no new cases, I should feel that there is still at any time danger of recurring cases among them there or among persons who might be liberated.

When we feel obliged to raise the quarantine, I think you had better make arrangements so that the local board of health of every town to which persons are going from Shiloh may be notified and keep the released persons under observation. Of course, we wish to keep them there until there appears to be no necessity for other towns quarantining members of the colony.

Recurrances of cases of smallpox and of deaths, and of successive quarantines, and raising of quarantines went on until June 10 when the secretary of the State board inspected the last batch of eight convalescent cases, the badly marked faces of many of whom showed that they had survived severe and dangerous attacks of smallpox.

The whole number of deaths in this last outbreak, dragging over about six months, was six. The first of the cases was that of Mrs. J., one of their evangelists. The first death was that of her boy, seven years old, January 3. Mrs. J. died the next day. A Miller baby died on the 11th and the Rev. Mr. Sutherland two



days later. In March, Charles E. Whittaker died on the 22d, and S. M. Shaw, forty years of age, on the 25th.

This is a pitiable showing of cases of smallpox and of deaths from smallpox which were unnecessary and need not have occurred. Compare with it the narrative of the Cedar Grove outbreak—75 men intimately exposed to smallpox, promptly vaccinated and not a case of smallpox following. Compare with it the outbreak in Connor Plantation stamped out speedily under much more unfavorable conditions, save these French people accepted vaccination together with disinfection and some little degree of restriction of their movements and visitings. In dozens of outbreaks in lumber camps, the showing with vaccination and what else could be done, was vastly better. To the average observer it looks as though the divine protection rests upon him who tries to protect himself. To the ordinary person it looks as though we should, neither in our persons, or surroundings, nor our conduct, become needlessly a menace to the lives or the health of other persons. In this instance, aside from the unnecessary transmission of smallpox from person to person within their own walls, smallpox was carried to Lisbon, Bowdoin and Portland, and unvaccinated persons finally released from quarantine caused much solicitude and other trouble in the places to which they went.

One lesson may be drawn from this attempt to control smallpox in a colony where the impression prevails that if they should accept vaccination, they would dishonor God. It is that the period of quarantine which may safely suffice for exposed persons who are pretty promptly vaccinated, is not a safely sufficient period of isolation for unvaccinated persons.

The first and second periods of quarantine were too short as the results plainly indicated, though the first batch of secondary cases were evidently contracted while they were isolated in the same cottage with Mrs. J., the first person sick. The secretary of the State board of health wishes that any strictures herein implied shall rest upon himself and the aura which hovered over Shiloh and kept her people from accepting the benefits of vaccination. The local board of health followed faithfully the advice of the State board, and its secretary particularly, Mr. S. B. Libby, sought conscientiously to do his duty to his town and Shiloh.

## STACYVILLE.

The following report on the Stacyville epidemic of smallpox was prepared by Dr. Henry Hawkins, one of the inspectors of the State board of health:

At Charles Peavy's on the Shin Pond Road about one mile west of Patten two of his sons had what they all claimed to be a cold and breaking out of "cold-sores" over face and forehead.

The eruption was not marked nor was the illness very severe before the eruption. A doctor was not called. The eruption occurred about the middle of November, 1903. A Mrs. O'Harrach, who was living there at that time was taken sick about the first of December with what was supposed to be a severe cold. She ran at large calling freely on all neighbors at Stacyville. The next transplantation comprised the McGrath girl and the Davenport family. These cases were more severe and were diagnosed as smallpox and quarantined as such.

The local board of health were not accustomed to handling smallpox, did not understand their duties, and were hardly disposed to attend to what few duties they did understand were theirs. Before the second series of cases were diagnosed and quarantined, the exposures had been many.

On January 6, I saw with Dr. Upton, of Sherman, eight cases. Two of the eight were very sick, one confluent case. I left the usual instructions with Dr. Upton to be given to the local board of health, to wit.: that all cases should be quarantined until the period of desquamation was complete, that people quarantined should be called on by the local board, or someone appointed by them, every day or two to ascertain their needs and to supply them.

January 29, Dr. Young and I called at Stacyville, found that as few as possible of the duties of the local board had been performed, that quarantine had been but laxly observed, that the cases had increased in numbers and severity. Those quarantined were breaking quarantine under the pretext that they had to do so to obtain the necessary provisions for themselves or hay for cattle. Dr. Young instructed me to see that the local board hired a man to do the work of nurse and disinfecter, to look after the observing of quarantine and the supply of provisions.

The man employed, J. E. Davenport, was instructed by Barney Fisher in the work of disinfection.

During February but few new cases occurred, but these patients suffered from the disease in a severe form. There were several confluent and semi-confluent cases. There was one death in the adjoining township, Hersey Plantation, a Mrs. Allen.

March 2, I was called to Stacyville to investigate the report that the Allen house could not be disinfected. I found that it was nearly air-tight, a shack covered well with tarred paper with tight fitting windows. But it was dirty in the extreme.

Upon this visit, I found that the man employed by Stacyville had been doing good and efficient work. There was a question raised as to the pay of this man for the work which he had done. The work done for the cases in Stacyville was to be paid for by the Plantation of Stacyville. But the work done for the cases in Hersey Plantation was guaranteed by me, since Hersey Plantation was not organized and the inhabitants were squatters and were not taxed.

After my visit here on the second of March, there were no new cases of smallpox, all cases then existing were discharged, disinfection was done, and the houses generally were cleaned up.

#### UPPER PENOBSCOT REGION.

December 13, information was received from Dr. Nichols that a Mr. Johnson who manages about 300 men in on the North Branch of the Penobscot, reports that there are cases of smallpox in his camps. This telegram was sent the same day: "Go to Johnson's camp with nurse, or send Thompson. If you go yourself return soon. Vaccine and formaldehyde sent. Probably there tonight."

(Signed)

YOUNG.

Dr. Nichols went himself. On the 18th he reached Jackman again and reported as follows:

Have just gotten back from the North Branch trip. I found three cases of smallpox in Cathcart's camp. Have built pest house and placed men in it. Fumigated wholesale, and hope for the best. There are between four and five hundred men divided into fourteen camps. I was gone five days and drove a hundred

and forty-three miles on the round trip. I took in a very intelligent nurse and medicines in plenty, so I feel that they will get good care. I have written in to the Company, giving them the true conditions. The men are all frightened, but I quieted them all down and not a man has left. The Company have another pest house built at the Depot Camps, or nearly finished, so we are prepared for the worst. There are seventeen cases in Megantic. I had Dr. Boothby go over there and investigate.

(Signed)

ESTES NICHOLS.

Not another case occurred in these camps. Barney Fisher, the nurse, stayed until the complete recovery of these cases, and then gave these three men and everything pertaining to them a thorough disinfection before releasing them from quarantine.

Smallpox had been introduced into Bangor and Old Town from the lumber regions in the summer of 1903, and had remained unrecognized long enough to get a disastrous start. There was therefore reason to apprehend danger of the infection of lumber camps from these cities and from the Madawaska region. The outbreak above the Northwest Carry early in September was the first of a series of outbreaks, many of which received their infection from these Penobscot towns.

A telephone message was received from Mr. Wadleigh of Millinocket, October 29, 1903, for me to see a case of smallpox in his camp in on a tote-road from Norcross. Dr. Woodcock of Bangor received a similar message at the same time. Dr. Weymouth of Millinocket, with whom provisional arrangements had been made to take action in case an emergency should arise in his region, was asked to visit the camp and employ such measures as might be needed. The next day a report was received over the telephone from Dr. Weymouth that the case of smallpox was at Intervale Lake near Pamadumcook. He had gone as far as Norcross, but found that Dr. Bryant of Millinocket had, at Mr. Wadleigh's request, gone up to the camp, and he found that Mr. Wadleigh had also telephoned to Dr. Varney of Old Town to come up and vaccinate his men. Dr. Varney was subsequently employed by Mr. Wadleigh to look after the outbreak in his camps.

October 31, Dr. Bryant reported over the telephone that he had seen the case of smallpox near Lake Pamadumcook, that the patient is in the late pustular stage, and that the arrangement for isolation is in his opinion safe and sufficient for the present.



After Dr. Varney's return to Old Town from this first trip, he reported that he was going up again to the Lake at the expense of the lumber operator; but he was requested at the same time to learn what he could about the presence or absence of smallpox in surrounding camps, and for this work and for enforcing the rules and regulations of the State board of health, he was to receive partial compensation. He was for the present to go alone, but he was instructed that if necessary a nurse would be sent to help him later. Further instructions were given by letter.

November 9, a report was received that a man had just arrived in Old Town from Grindstone with fully developed smallpox. The eruption had probably been out six or seven days. He had been working for Mr. Henry L. Barker who had a lumber operation in from Norcross. Mr. Barker was to send a doctor to his camp the next day.

November 19, the secretary of the State board met Dr. Varney in Bangor. He had just come down from the head of Pamadumcook Lake. He reported that ten men are on their way down to Millinocket from an infected camp. A telephone message was sent to Dr. Weymouth of Millinocket asking him to see about these men from the infected camp and to take such measures as he might find necessary to guard against infection. Dr. Varney was to go back up into the lumber regions again the next day. He went in this time by the way of Greenville, tracing one case from Old Town to Spencer camp. He quarantined two camps. Twenty men were vaccinated and quarantined. Another crew of men found at Greenville were followed to Lily Bay and 46 out of 55 of the crew were vaccinated.

December 1, Dr. Varney reporting from South Twin Lake says that he had a hard journey in coming down as it was necessary for him to walk around the shore of the lake as the boat had stopped running. Two cases of smallpox were found at Pamadumcook Lake in an old shack. The men were vaccinated and Mr. Wadleigh's camp from which the cases had come was disinfected.

December 2, another case of smallpox was visited. Three other camps were visited, but no cases of smallpox were found. He returned to Estey's camp near a siding on the Bangor & Aroostook, but found no cases.

December 5, the secretary of the State board met Dr. Varney and Dr. Woodcock, a member of the State board, in Bangor, and Dr. Varney made a verbal report on the smallpox situation up in the woods. As two additional cases of smallpox had come from Mr. Barker's camp and were then in quarantine at their home in Milford, Dr. Varney was instructed to visit that camp. On the 9th, he reported that he had just returned, that of the 48 men there, all were well except one man who had a mild case of smallpox. The crew had been vaccinated, the camp was quarantined for seventeen days, the infected beds were burned. He reported a very good camp and that it was well conducted. He was intending to go up the lakes again the next day.

December 17. On this date, it was learned over the telephone that a case of smallpox had appeared in the camp of Mr. Butterfield of Millinocket, west of Mount Katahdin and south of Sourdnehunk Lake. The case had been put into the same camp with the case which came from Mr. Wadleigh's camp. A telegram was sent to Barney Fisher of Jackman, who worked for the board the winter before as a nurse in smallpox camps and as a disinfecter, to go to Millinocket on the first train and then to call the office over the telephone.

Mr. Gates of Millinocket, the same day telephoned that eight men had come out from Mr. Butterfield's infected camp. He was instructed to insist upon their immediate return to the camp. The next day Mr. Gates reported that six of the men had returned to the camp, but that two still remained in Millinocket. He was told to threaten them with arrest if they did not return to the camp, and that their fine and cost might amount to more than their wages. It was afterwards learned that these two men started for the camp, but that they probably returned to their homes in New Brunswick.

December 19, Mr. Butterfield telephoned that Barney Fisher had not arrived and he requested that someone else be sent to the camp. He had heard that there was a second case of smallpox in his camp. Arrangements were therefore made over the telephone for Dr. Varney of Old Town to go up. Dr. Varney reported that he found a typical case of smallpox in the camp and had him isolated in the smallpox camp. The floors of the camp were scrubbed and a general cleaning up and disinfection

was carried out. It was reported that this case came from Stacyville. Many men had been exposed and the doctor reported that it was a bad mess, and that he expected more cases in this camp.

December 28. A telephone message was received from the office of the Eastern Mfg. Company in Bangor saying that smallpox had broken out in Marsh & Ayer's camps on the Eagle Lake of the Allagash. It was learned over the telephone that it would be necessary to go in by the way of Patten northwest nearly seventy-five miles. No inspector was at the time available to send up to these camps, but arrangements were, as soon as possible, made with Dr. Varney of Old Town to go up there. He started Dec. 31, and from the Bangor office, instructions were given that arrangements had been made with Senator Gardner of Patten to give him information and to get a team for his transportation. Mr. Fisher went up to Eagle Lake with the doctor. On the way up, eight men from Marsh & Ayer's camp were met on their way down to Patten. A messenger was sent across to Chesuncook Lake from which a message was telephoned and telegraphed to the office of the State board of health saying that these men were on the way down and expected to be in Patten Tuesday. The doctor wanted the men detained and disinfected. A telephone message was sent to Dr. Hawkins at Millinocket to go to Patten on the first available train in the morning. He was to require the local board of health to do what is necessary in disinfecting the men and to advise and help the local board. Otherwise than this, the work was not to be done at the expense of the State. Remind the men, if necessary, that they have disobeyed the requirements of two special orders of the State board of health, to wit: they were not vaccinated (probably), and they left an infected camp without permission.

January 5. Dr. Hawkins reported under this date from Patten that he arrived on the first train from Millinocket and found the eight men to which Dr. Varney's telegram referred. He could not get a straight story from them in regard to smallpox or their exposure to it: but he thought he had evidence enough of the probability of their exposure to warrant him in requiring their disinfection. He therefore gave them all a bichloride bath and had their clothing disinfected. He thinks it will be better

for him to stay in and around the Patten, Stacyville, and Millinocket region until the return of Dr. Varney or Mr. Fisher. The further history of smallpox at Marsh & Ayer's camps is given under "Eagle Lake."

January 11, Dr. Varney reported two more cases at Butterfield's camp and that it was therefore necessary to put the quarantine on again which had recently been raised.

January 13. Returning to the office in the forenoon, the secretary of the State board of health found a letter from Dr. Varney. The 12.35 train was taken to meet him at Millinocket. Arriving there, a consultation was held between the secretary, Dr. Varney, Mr. Fisher, and Mr. Butterfield.

January 21. Mr. Fisher telephoned from Millinocket that he had returned from another trip to the Sourdnehunk region. He had disinfected one camp and had heard a rumor of a case of smallpox in the camp of G. A. Gray on Harrington Lake. Since returning, he had been to Stacyville and reports that the people who have smallpox in their houses will not remain in quarantine. He was requested to go back to Stacyville to see the people and to tell them that they must be careful and not spread infection, and that if they failed to comply with the requirements of the health laws, legal action would be taken against them. Mr. Gray of Old Town was called up over the telephone. He said that the man in his camp was taken sick about two weeks before, that the man is well now, and that no new cases have been reported by the boss.

January 22. Mr. Gray telephoned that he has heard from the camp and that the crew are uneasy, and he fears they may leave. He doesn't know whether the case was smallpox or not. The promise was made that Mr. Fisher should be sent up to the camp. A telegram was sent to him at Stacyville to get back to Millinocket that night.

January 23. Another visit was made to Bangor for the purpose of meeting Dr. Varney and receiving his report on the conditions at Eagle Lake. He had found 10 new cases there.

January 27. A telephone message was received from Mr. Fisher at Millinocket. He was just down again from the Sourdnehunk region. Having come down from Madison in the forenoon, I was in the office one hour, then a hurried dinner,



and off to Millinocket on the 12.35 train. A consultation was held with Dr. Hawkins and Mr. Fisher in the evening. Mr. Fisher had found two more new cases of smallpox in Mr. Butterfield's camp.

January 28. The 6.43 train was taken from Millinocket to Stacyville, Dr. Hawkins accompanying me. Mr. Fisher was left at Millinocket to await further orders. There had been a heavy snow storm. Getting a team at Stacyville Station, we broke the roads to the house of Mr. McClellan, chairman of the board of Assessors. He was away. We started for the house of the second Assessor, but on the road learned that he was away in the woods. We then drove to the house of the third Assessor, who was also a member of the local board of health, and found him quarantined on account of smallpox in his own house. It was learned that no sufficient provision had been made for going on errands and otherwise attending to the wants of the quarantined families. We then took the train to Patten to see what arrangements had been made for a team to carry him to the Eagle Lake of the Allagash. Several of the business men were consulted about the desirability and necessity of an inspection station at Shin Pond for the control and treatment of the men when they came down from the infected camps. It was later decided not to establish an inspection station at Shin Pond, but to give all infectious men their final disinfection at the camps just before they came out.

The 2.55 P. M. train was taken from Patten and at Stacyville Station there was a few moments for a talk with Mr. Townsend and Mr. Black of the local board of health. Dr. Hawkins was left to complete arrangements for the management of the outbreak in Stacyville, then he was to take the evening train to Millinocket.

January 30. Dr. Hawkins telephoned from Patten that he had again been to Morrison's camp and had seen the local board of health of Smyrna and Oakfield. He was just starting on the long drive to Eagle Lake.

January 31. Dr. Hawkins started for Marsh & Ayer's camps on Eagle Lake. Upon his arrival, he found 20 cases of smallpox in one camp. He inspected six camps in all. He was up in the woods this time until February 17 when he left Barney

Fisher in camp No. 3 as nurse over nine men with written instructions that they were to be kept by themselves until they were ready to be disinfected and placed in the main camp which was to be disinfected first February 18 and then again after the last man was released.

February 1. Mr. Butterfield telephoned that he wants to let thirty-five or forty men go from his camps. He was promised that arrangements would be made as soon as possible for the disinfection of these men.

February 4. Mr. Fernandez, secretary of the local board of health of Old Town, telephoned that he had been employed by Mr. Gray to visit his camps on Harrington Lake, that he had just returned, and that he had found four cases of smallpox.

February 7. It had been found necessary to ask Dr. Hammond of Van Buren to let Mr. Keegan, his assistant and disinfecter, come down to help Dr. Hawkins in his work. He had therefore for a while been helping in the Millinocket region; but, on this date, an urgent telegram had been received from Dr. Hammond asking that Mr. Keegan be sent up to help him a few days in that region. He was sent there as soon as possible.

February 8. Mr. Fisher telephoned from Millinocket that he had arrived from Eagle Lake and that Dr. Hawkins, who went up with him this time, had remained at the Lake until Mr. Fisher could return. Mr. Fisher was obliged to come down and then go immediately to Mr. Butterfield's camps. He was to return in three days.

February 11. Upon his arrival in Millinocket, Mr. Fisher telephoned that he was just out from Butterfield's camp. There had been no new cases of smallpox. Twenty men were coming out tomorrow. Orders were given over the telephone for Mr. Fisher to make preliminary arrangements with Mr. Heebner of the local board of health of Millinocket to have those men disinfected when they arrived at that town.

February 15. Mr. Fernandez telephoned that he is, tomorrow, going to Gray's camp on Harrington Lake at Mr. Gray's expense. This is his second trip. On the 22d, he wrote from Harrington Lake that two cases of smallpox had been cleaned up and that five still remained in the pest house well cared for.

February 23. Mr. Keegan was sent forty miles up into the woods to disinfect one of the camps.

March 10. From the last date until this, the remaining infected lumber camps were cleaned up and disinfected before the men were discharged. On this date, Mr. Fisher telephoned from Millinocket that he was just down from the Eagle Lake of the Allagash where he had cleaned up everything. He was ordered to go to Oakfield to help Dr. Hawkins.

After the men had come out of the camps, one outbreak of smallpox occurred on one of the drives. May 23, 1904, information was received that smallpox had broken out on one of the drives on the East Branch of the Penobscot. Dr. Hawkins, who was on smallpox work in another direction, was got by means of telegraph and telephone as soon as possible, and started to attend to the matter. A letter was received from Dr. Merrill of Patten on the day he started saying that the case was at Haskell Rock which is forty miles from Patten, all but eight miles *not* turn-piked road, and it is a hard trip. Dr. Hawkins' notes on this trip are as follows:

May 23-24. From Pittsfield to Grindstone on the night train. There I met Mr. Cornelius Murphy, superintendent of the drive who directed me to Patten, thence to Grand Lake, and then down the East Branch to Haskell Rock.

May 25. From Patten to Grand Lake. I was delayed at Patten in getting supplies and a team. I left Patten at noon for Grand Lake over a thirty-mile tote-road. I arrived at Grand Lake at 10 P. M. in the rain. Mud and mire were the chief features of this ride. The hubs were sometimes even out of sight. From Shin Pond in, the horse could go but little faster than a walk, and part of the way could hardly walk. I would say that the best of Patten teams are poor enough; but, judging from my personal experience, the poorest of the Patten teams seem to be kept in waiting for tote-road trips. Patten would be a fine opening for the cruelty-to-animals man, or for turkey buzzards.

May 26. After spending the night at ——'s and feeding a small million of bed-bugs, I proceeded across Grand Lake in a canoe and then walked down the river bank some five miles, and then went a few miles in a batteau. I arrived at Haskell Rock at three in the afternoon and found the case of smallpox. Two men had left camp before I arrived.



May 27. After a rainy night in a tent, I disinfected all the bedding that had been exposed to smallpox and ordered official quarantine to be raised the tenth of June from all men who had been exposed and who had not become infected. The patient was to be disinfected and discharged when the period of desquamation was completed. [Mr. T. F. Abildgaard of Washburn who had the year before done work for the State board of health had been engaged to go to Haskell Rock with Dr. Hawkins. He arrived in camp this day.]

May 28. I gave instructions to Mr. Abildgaard. He was to see that the necessary quarantine was observed, that the bedding and clothing of all the men should again be disinfected, and that he should determine when the patient was ready to be discharged. I left Haskell Rock at 9 A. M., walked some five miles, and then came the rest of the distance to Grindstone in a canoe. I then took the afternoon train to Millinocket and then the evening train to Bangor.

May 29. Sunday, Bangor. The two men of the Haskell Rock camp who left after the patient had broken out with smallpox, and who had been exposed and should be considered in an infectious condition, were traced to Bangor. I reported them to the local board of health. They were easily found and kept under observation by the local board. It was June 19 before Mr. Abildgaard could do the final disinfection and cleaning up which was required by this outbreak.

The following is from the report from Mr. Abildgaard on his management of the outbreak:

My instructions from Dr. Hawkins were to raise the quarantine on June 10, excepting Ford, (the smallpox patient) providing no more cases developed. May 31, Mr. Murphy, manager of the Driving Company, discharged all these men and settled with them. The cook was successfully vaccinated last fall and was ready to be cleaned up at the time—to wit: May 31, but I had to keep him and the cookee to cook for the men. Dr. Merrill, of Patten, when at Haskell Rock, vaccinated three of the men but it did not take on any of them. When the virus sent to Dr. Hawkins arrived, I vaccinated these three men and it took in fair shape. June 10, I cleaned up all the crew, excepting Ford. They all got new underclothing, which I kept in my tent until wanted. Most of the clothing the men had been wearing they burned. What clothing was not burned, I disinfected thoroughly and had each man strip and gave him a bath using



bichloride as a solution. I also disinfected what money, papers, and other effects they had in their possession. Five of these men went out. Four went to work again for the Driving Company, and are now there. This left Ford and myself alone, and, as we were short of provisions, I sent to Mr. Harvey for some canned goods and I did the cooking until I cleaned him up, which I did June 17. He burned all his clothing he had been wearing during his sickness except his hat, shoes and sweater. These and what clean clothing he had, I disinfected thoroughly and gave him a good bath using the solution above mentioned. I considered him in good shape to clean up. The crusts had all disappeared. He had very few spots on his face and hands. On his body from the hips down, spots of a purplish hue were quite numerous. I disinfected the tents, bedding, and dishes thoroughly. Burned up all papers and rags lying around and left the camping place as clean as possible. June 18, I left Haskell Rock. Ford has gone to work again for the Driving Company.

#### VAN BUREN.

January 2, 1902, a telegram was received from Dr. H. H. Hammond, of Van Buren, medical inspector for the State board of health and secretary of the local board of health, saying, "Two cases suspected smallpox. Can you come at once?" It was necessary to answer: "Impossible to come. Too many calls all directions. Take no chances. Will write." The letter of same date said:

I regret very much that it is just now impossible for me to come up to your place, or to send a man up there. As I telegraphed to you, there are too many calls in all directions to make it safe for me to leave the office, and our medical inspectors, four just now, have their hands full in other places, so that it is impossible for them to leave. Our chief inspector, Dr. Nichols, has left Jackman and gone to Fort Kent thence up the river to Seven Islands, where I fear he will find a bad condition of things. He found one case of smallpox in Fort Kent village. The smallpox situation has never, to my knowledge, been so critical as it is just now.

I would urge you to take no chances on any doubtful cases. Possibly later, if there is unusual difficulty in making the diagnosis, I may be able to send a man to you.

I have ordered fifty points of vaccine to be sent right along to you to-day noon, fearing that you may not be able to get a supply to start with. If you need more telegraph to me, and I will have it sent at the expense of your town.

(Signed)

A. G. YOUNG, *Secretary*.

A day or two later Dr. Hammond wrote: "There are eleven well developed cases all typical. Found suspects with typical prodromal symptoms; all strictly quarantined. Schools, stores, etc., closed and all business practically suspended. Our local board has taken every necessary measure to co-operate with me and I think we can handle the cases though if it were possible I would like to have you send somebody for a few days."

Dr. Nichols having returned to Fort Kent, a telegram was sent to him to go to Van Buren a few days if it was possible for him to do so. He went immediately. A letter from him at that point expressed the opinion that the infection in Van Buren had come from Presque Isle and the Seven Islands, and further said that he feared that there would be much trouble because there are two men who were sick at least twenty days before a correct diagnosis was made. Drs. Hammond and Nichols both reported that the same disease existed across the line in St. Leonards, but that over there they were calling the disease chickenpox and taking no precautions. The following letter was sent to Dr. Hammond January 7:

Your letter of the 5th is received this morning. I thank you very sincerely for the prompt way in which you have got after the outbreak. I should like very much, if it were possible to do so, to send a man up to help you for a few days or a week, but we have so many calls in so many directions that I cannot see my way to do it. I trust that the short visit of Dr. Nichols to confer with you yesterday was a source of satisfaction and help to you. He goes to-day to Presque Isle, as you of course know, and will be able to make only a brief visit there. It is time for him to get up the river again as soon as possible. Probably he will find all supplies which he has ordered there upon his return so that he can leave promptly. A letter which I have just received from Presque Isle says that they have found six houses in which there have been or are now cases of smallpox and they fear that it is in other towns around them.

(Signed)

A. G. YOUNG, *Secretary.*

Under the date of January 13, Dr. Hammond wrote: "I think that unless prompt and effective steps are taken by the authorities across the border the epidemic will soon have assumed such gigantic proportions as to be difficult to handle. Personally I know of seven cases of smallpox now existing in St. Leonards and many reports are circulated of other cases in the neighboring settlements."

Again under the date of February 2; he reported that, "Authentic reports teach me that many cases of smallpox now exist in St. Leonards, N. B.—directly across the boundary line from Van Buren—and that the local authorities are taking absolutely no measures to suppress the prevailing epidemic. Several of the camps about that place have been infected and many of the lumbermen are coming to their homes in various stages of the disease."

Under the prompt and intelligent work which was done the prevalence of smallpox was rapidly diminished, but there were so many sources of infection beyond our control with nothing but the easily crossed river between, and the disease had been found in so many other of the towns and plantations in the Madawaska region that, to the time of writing this, July, 1904, it has been impossible to stamp out infection so as to prevent recurring cases. Much of the difficulty in this work has been due to the apathy of the local boards of health in this northern region.

Circular and personal letters were sent to local boards of health supplicatory and mandatory in tone hoping to arouse them and the people to efficient action; nevertheless, the results of the apathy and of the frequent importation of infection from the lumber regions and from the provinces was a culmination of the trouble. Dr. Hammond had been having the assistance of Mr. Sears, the disinfecter and otherwise helper of Dr. Flint in the Seven Islands region. In an epidemic lull he had been spared to help in the Ft. Kent region. But early in June, 1903, the urgent representations of Dr. Hammond made it apparent that more help was needed. Arrangements were made with Mr. Henderson, of Hallowell, already well trained in smallpox work as chairman of the local board of health of his city to go. The following extracts from letters received from him give some idea of the situation:

After looking the situation over, I concluded that it will be difficult to stamp out disease here unless the State can control the matter. I found one settlement where it is said that smallpox has been in every house. The first house I called at the people had gone to the village. The first house I fumigated was near the schoolhouse, and the teacher was boarding at the house. In fact there is not a semblance of quarantine and the town authorities pay no attention to the matter whatever. I



do not know how many places are infected, as I find out at each place where there are more. At each place I find some member of the family having marks of the disease.

A large number of houses were disinfected by Mr. Henderson, and Mr. Omer C. Keegan was instructed how to do efficient disinfecting and other necessary work. The following letter was sent to the local board of health of Van Buren:

Your local board of health undoubtedly understands that, when smallpox occurs in your town, the law provides that you shall promptly take measures to stamp out the disease. Last spring when smallpox first occurred in your town, and for some time thereafter, I think your local board of health did good and efficient work, but the reports which I have recently received from Van Buren indicate that your local board has been doing practically nothing—no quarantine of cases, no vaccination, no disinfection. The result is that smallpox is badly distributed in your town, and it will be a difficult and costly job to suppress the epidemic. It must however be done, and while the State board of health, and, perhaps if I can so arrange it, the United States Public Health and Marine Hospital Service may give you some help, you must take hold in earnest to stamp out the epidemic, and you must do it to the satisfaction of Dr. Hammond, who is now acting as medical inspector for the State board of health and who may be appointed under my advice as inspector for the Public Health and Marine Hospital Service. In case you fail to take action at once, the State board of health will deem it necessary to put the cases of the members of your local board of health into the hands of the county attorney for prosecution, and the cases of any other town officers who fail to carry out the requirements of the State board of health.

If it is possible for me to do so, I shall come up to confer with you before long, but, for the reason that I have been obliged to be on the road a great part of the time since the first of April to look after outbreaks of smallpox, many kinds of office work have been delayed, and it is difficult now for me to be gone long.

(Signed)

A. G. YOUNG, *Secretary*.

In August, 1903, the United States Public Health and Marine Hospital Service took over the inspection service of the lower Madawaska region by appointing Dr. Hammond acting surgeon.

#### VANCEBORO.

No cases of smallpox occurred in Vanceboro within the two years, but it was necessary to take precautionary measures at this point several times to guard against the introduction of infection. In January, 1902, Dr. M. L. Young of Vanceboro,



who holds the appointment of inspector for the State board of health with instructions to act in case of emergency and who has at various time officiated as an inspector for the United State Public Health and Marine Hospital Service, reported to the State board of health that an outbreak of smallpox had occurred in Lynnfield, Charlotte county, N. B., a town below Vanceboro and nearly opposite Princeton and Indian Town. There had been only one case, but as this case had passed for chickenpox for some time, and it was thought that numerous persons had been exposed, it was deemed necessary to take prompt measures to prevent the arrival of infectious or infected persons on our side of the line. To enable local boards of health along the boundary line in Maine to act more effectually if need be, the following special order of the State board of health was issued and distributed in that region:

Section 1. On account of an outbreak of smallpox in Lynnfield, Charlotte county, N. B., and the presence of exposed persons there and perhaps in adjacent places, it is hereby ordered that, until further notice, no person shall come from Lynnfield, or neighboring or intermediate places, to any city, town, or plantation in the State of Maine, unless he is able to prove to the satisfaction of the local board of health of the place to which he comes that he has not been exposed to the infection of smallpox, and that he has been vaccinated.

Section 2. All persons coming to places in Maine from those parts of New Brunswick mentioned in Section 1, shall immediately report their arrival to the local board of health of the place to which they come.

Through Dr. Young of Vanceboro, the State board of health was kept constantly informed of the situation on the other side of the line. Some new cases developed, but were properly treated by the Provincial authorities.

In December of the same year, the steamer Lake Champlain of the Elder-Dempster line from Liverpool arrived at St. John with smallpox aboard in the steerage. There were 1,001 people aboard the ship, 795 of whom were in the steerage. It therefore became necessary for the State board of health to become assured that the proper precautionary measures were taken at the Provincial quarantine station. Some of the steerage passengers were released it seemed prematurely to us; but in answer to inquiries from the office of the State board of health, Dr. W.

C. Billings, assistant-surgeon United States Public Health and Marine Hospital Service at St. John, New Brunswick, gave the following information:

Replying to your inquiry of December 23, relative to the disposition of the steerage passengers aboard S. S. Lake Champlain, I have to state that some hundred and twenty who had been quartered abaft the bridge were allowed to proceed to their destination. Of this number thirty-eight were manifested to the United States and were examined by myself. All the forward steerage, in round numbers about 600, were removed to the quarantine station where they now are. The forward steerage on this vessel is separated from the steerage abaft the bridge by two bulkheads and there was no way of any communication between them except through first or second cabin quarters which of course was not allowed. The release of the after steerage was made with my knowledge and consent and I do not think there is any possibility of conveying infection. The others will be held at the quarantine station the required length of time.

January, 1903, Dr. Young informed the board that smallpox had broken out at McAdam Junction, N. B., six miles from Vanceboro. Dr. Young assured himself that the necessary precautions were observed to guard against the spread of infection to our State.

OUTBREAKS OF SMALLPOX IN OTHER PLACES.

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Brief notes are here given on outbreaks of smallpox in various other places not included with the foregoing either because the number of cases was small, or because they were managed by the local boards with little or no help from the State board.

*Argyle.*—In this town there were 5 cases of smallpox in one family in October, 1903. The source of the infection was Bangor.

*Auburn.*—In Auburn there were 4 cases of smallpox in 1903. Two houses were infected.

*Augusta.*—There was one case of smallpox in June, 1902, and 10 cases in 1903.

In the outbreak in the spring of 1903, the first case was so mild that it was thought to be chickenpox. One other case was mild, and two were very severe, one of which proved fatal. This outbreak and the outbreak in Farmington illustrate, as many other outbreaks have, that malignant cases of smallpox may be contracted from the disease in the mildest form.

*Avon.*—One case in 1903.

*Bangor.*—There was one case of smallpox in 1902. In the fall of 1903, however, a serious outbreak occurred as the result of the non-recognition of the true nature of the earlier cases which apparently were very mild, although severer cases occurred later on. In this outbreak, there were altogether 162 cases and 110 houses were infected. The origin of the outbreak, as reported by the local board of health, was infection brought by Canadians from the Province of Quebec to lumber camps on the American side where its spread was favored by the lack of vaccination of the crews.

*Belfast.*—There were 3 cases of smallpox in August and the two following months. The local board reported the origin of the infection as Bangor.

*Berwick.*—There was one case of smallpox. The man who developed the disease received the infection in one of the Aroostook towns.

*Bingham.*—One case of smallpox in Bingham was brought from Athens in the latter part of December, 1903.

*Blanchard.*—In this town, there were 5 cases of smallpox in September and October of 1903. A man who had the disease came to Blanchard from a cheap boarding-house in Bangor. One man went from Blanchard to Shirley and there came down with the disease, and one went to Greenville and was there quarantined. Both of those men left Blanchard before the local board of health was aware of the nature of the disease.

*Bowdoin.*—One case of smallpox in March, 1902, had its origin in the Shiloh outbreak.

*Brewer.*—There were in 1903, 48 cases of smallpox altogether with 28 houses infected. The first case appeared August 22, the second September 14, and the third September 28. There were then no new cases until October 12, and from that date until November 9, 45 cases were reported.

*Brownville.*—In 1902, two men came down with smallpox in a boarding-house at Brownville Junction. There were 9 cases altogether in this outbreak. In August, 1903, a man who had been down to Holden came to Brownville and developed smallpox. One other case occurred.

*Brunswick.*—In Brunswick, there was only one case of smallpox in May, 1902. The man was a stone cutter recently from Boston.

*Bucksport.*—Two cases of smallpox in October and November, 1903. Neither of these patients had ever been vaccinated. Persons exposed to these two cases were vaccinated promptly and none of them contracted the disease.

*Burlington.*—Only one case of smallpox occurred in this town, and this case came from Plantation No. 2.

*Caribou.*—In this town, there were 60 cases of smallpox in 1903.

*Carmel.*—Two cases in December, 1903.

*Castle Hill.*—The reports of the local board of health indicate the presence of 20 cases of smallpox in 1903.

*Chapman Plantation.*—In the early part of 1903, there were 18 cases of smallpox in this township with 12 houses infected.



This town was included in the narrative of smallpox in the Presque Isle region.

*Clifton.*—There was one case of smallpox in this town in December, 1903.

*Cornville.*—There were 22 or 23 cases as near as could be counted by the local board of health in the last three months of the year. The infection was brought from Athens with the exception of one case which was referable to Skowhegan. This outbreak was mentioned in the narrative of smallpox in the Athens region.

*Cyr Plantation.*—In Cyr Plantation, there were 19 cases in three houses. These cases occurred in the early part of the year.

*Dayton.*—In 1902 there was one case of smallpox in December, and there were 2 cases in January of the following year. The disease was contracted in Kennebunk by a school teacher.

*Dedham.*—In October and November of 1903, there were 3 cases of smallpox the infection of which was supposed to have been brought from Bangor.

*Dennistown Plantation.*—One case of smallpox was present in this plantation in 1902.

*Eagle Lake Plantation.*—The local board reported 1 case of smallpox in 1903.

*East Livermore.*—An epidemic broke out in August which resulted in 11 cases. The infection was supposed to have been brought from the town of Jay. The local board of health reported that in one family consisting of a man and wife and three children, two of the children had been successfully vaccinated three years before. The other had been unsuccessfully vaccinated. The two girls escaped the disease although fully exposed. It is reported from this town as it has been reported from many other sources that no one who had a recent successful vaccination had the disease, no matter what the degree of exposure.

*East Machias.*—There was one case of smallpox in this town in the year 1903.

*Easton.*—One case of smallpox in July of 1902, and in May and June of 1903 there were three cases of smallpox in the same family. In both of these outbreaks, the cases were quarantined immediately and there was no extension of the disease from the first families.

*Eddington.*—One case of smallpox in 1903.

*Eden.*—One case in the autumn of 1903.

*Edinburg.*—The outbreak of smallpox in this town resulted in 10 cases. It occurred in October and November.

*Enfield.*—The slight outbreak of smallpox which occurred in this town is reported under Montague.

*Foxcroft.*—Only one case of smallpox occurred in this town, that in November, 1903.

*Freeport.*—Three tramps were lodged in the tramp house in this town on the night of February 7, 1902. One of these men was taken very sick with the usual symptoms of smallpox. Dr. Smith, president of the State board of health, saw the case in consultation with the attending physician. It developed into a confluent case and his life was despaired of for a number of days, but he finally recovered. The other two tramps although confined in the same room with him all of the time, escaped the disease. They had good vaccination scars although the vaccinations were done some time before.

*Frenchville.*—There were 30 cases of smallpox in Frenchville in 1903.

*Fryeburg.*—A case occurred in Fryeburg which was seen by the secretary of the State board at the request of the local board. It appeared to be a typical case of smallpox though the subsequent history of the case indicated some doubt in regard to the nature of the disease.

*Gardiner.*—One case of smallpox occurred in Gardiner in March of 1902. This was the case spoken of in the report of the Cedar Grove outbreak originating from exposure to a case of smallpox at Iceboro Railway Station.

*Glenburn.*—In this town, there were two cases of smallpox in October, 1903.

*Goodwin's Mills.*—One case only was reported to the State board of health. The case was investigated by an inspector sent by the State board who found that the woman who had been teaching in Kennebunk probably received the infection in that town.

*Grand Falls Plantation.*—There were five cases in this plantation in June, 1903, all in one house. The infection in the first case was apparently received in Old Town.

*Greene.*—There was one case of smallpox in this town in April, 1903.

*Greenbush.*—Only two cases occurred in this town. They were in the fall of 1903.

*Guilford.*—There was one case of smallpox in Guilford in September, 1902, and one case in January of the following year.

*Hampden.*—In July, 1902, Dr. Woodcock, a member of the State board, reported to the office in Augusta a case of confluent smallpox in Hampden. Four days later, he reported by telegraph the death of the patient. This case was a hemorrhagic case in a woman who had never been vaccinated. She contracted the infection in Somerville, Mass.

In 1903 there were 11 cases in this town.

*Harmony.*—Five cases of smallpox in this town occurring in April and May of 1903 received their infection in Athens.

*Hartland.*—Two cases of smallpox were present in this town in November, 1903. They were due to the visit of a lady from Athens.

*Hermon.*—One case of smallpox in this town in 1903.

*Holden.*—In September, 1903, it was learned that an eruptive disease of a suspicious character existed in this town. Dr. Woodcock of the State board went to the town and made an investigation. Many of the cases were then fully convalesced and the period of desquamation in some of them was complete. In other cases, the appearance of the lesions which were left showed unmistakably that smallpox had been present. The doctor made arrangements for the thorough disinfection of the houses in which these cases occurred.

*Hollis.*—There was one case of smallpox, semi-confluent and quite severe, in this town in March. The infection was supposed to have been derived in Portland.

*Island Falls.*—In April, 1903, one case of smallpox was found in Island Falls, then convalescent, and with the period of desquamation nearly complete. He had come from a camp from which other cases of smallpox originated.

*Kittery.*—In this town there were two cases in the autumn of 1903. The infection was derived outside of the State.

*Levant.*—This town had only one case of smallpox, occurring in October, 1902.

*Lewiston.*—There were only two cases of smallpox in 1902, one in April and one the very last of December. The diagnosis in the latter case was confirmed by the secretary of the State board. The young man had the eruption then in the advanced stage of desquamation. The case had not been reported to the local board of health and there had been many exposures. Three girls boarding in the same rooms where this young man had been ill two and one-half days with smallpox, with symptoms which were undoubtedly prodromal of smallpox although no eruption was then apparent. The eruption appeared on the next day, and fifty-nine cases resulted from this young man's ignorance or wanton disregard of the welfare of others. Four other cases occurred later in the season.

*Lisbon.*—A group of cases all in the same house was found at Lisbon Falls. These cases originated in Shiloh just across the river. The secretary of the State board was called in consultation with the local board of health about the outbreak, March 14. There were then five cases. These cases were all moved back to Shiloh and were taken care of by the people there.

*Livermore.*—There were two cases in Livermore extending through the last three months of the year 1903. The disease was caught by Mrs. ——— while nursing her daughter's children in Chesterville. Mrs. ——— had this disease very lightly, and as the local board of health reports, her husband swore that it was apple itch, but when he got it he knew that he had smallpox and will wear the marks to his grave. Three sons who were vaccinated and quarantined in the same house escaped without contracting smallpox.

*Lyman.*—One case of smallpox in Lyman in January, 1903.

*Machias.*—June 16, 1903, Dr. A. L. Smith, secretary of the local board of health of Machias telephoned that a man with smallpox had come out from a bark peeling camp on Township 43, about forty miles from Machias. Arrangements were made with Dr. Smith to go into the camp to vaccinate the members of the crew, to disinfect, and to establish such quarantine regulations as might be found to be required. It is not known that any other case resulted from exposure to this one. The men were living in a tent, and left the camp before the eruption was fairly out.



*Macwahoc Pl.*—About the middle of November, 1903, a Mr. Lute, who was lumbering on Macwahoc stream about twelve miles above Mattawamkeag, came to Old Town broken out with smallpox. He was isolated in the Old Town smallpox hospital. It was learned that there was one other case of smallpox in camp. Dr. B. F. Porter, of Lincoln, was engaged by the State board of health to take charge of the camp. Dr. Porter was instructed to call upon the local board of health of Kingman as Mr. Lute had called upon a doctor in that place for advice. After seeing the doctor he had returned to his camp, then he came back to Kingman, spent his spare time at the hotel and then took the train for Old Town. The local board of health further reported that this man went into a barber shop, a store, and the postoffice, and stayed about two hours in the depot waiting for the train.

As there was a considerable number of lumber camps pretty near to this infected camp Dr. Porter was instructed to render such aid as he could to these camps to prevent outbreaks of smallpox in them. One other new case occurred in the camp after Dr. Porter's arrival. A small camp for isolation purposes had been built and a stove had been placed in it ready for occupancy. The man was promptly removed to it. No other cases occurred subsequently. After Mr. Lute's return to his camp he did everything he possibly could to co-operate with Dr. Porter to secure a thorough vaccination of his camp and everything connected with it so as to avoid further danger of infection. The quarantine was finally removed from the camp about the middle of December.

*Madison*—In 1903 there were six cases of smallpox in Madison and three houses infected.

*Mapleton*.—The report on smallpox in this town is included in that of the Presque Isle region. The number of cases which occurred in Mapleton was not reported to the office.

*Masardis*.—There were two cases of smallpox in that town in the early part of 1903.

*Medway*.—In the spring of 1903 a young man came from a lumber camp on the east branch of the Penobscot and developed smallpox. Two other cases followed.

*Milford*.—In the last quarter of 1903, Milford had seven cases of smallpox. The first case came from Bangor. The second

and fourth cases originated from the first; the origin of the third case was unknown; the fifth and sixth cases came from a lumber camp, and it was thought that the seventh case was the result of a visit to Ft. Kent.

*Moose River.*—The history of smallpox in Moose river is included in that of the Jackman region. There were seven cases in 1902 and two in 1903.

*Mt. Vernon.*—One case of smallpox, May, 1902, was contracted at the Hallowell Granite Quarries. The secretary of the State board of health was notified of the case by the selectmen of the town, and driving over found that the man had already been quarantined by the local board of health.

*Newburg.*—There was one case of smallpox in the fall of 1903.

*New Canada.*—In this plantation five cases of smallpox were reported to the State board of health for the year 1902, but it is probable that this is an underestimate of the number of cases which occurred.

*Newry.*—The outbreak in this town is spoken of under Bethel. There were two cases in a lumber camp in the southwest corner of the town in February, 1902. The two men were from Montreal and had been hired by an employment agency in Berlin, N. H. As this camp was left by the operator in an infected condition, the local board of health deemed it necessary to help disinfect it and thought that the cheapest and most effective way of disinfecting it was by burning.

*New Sweden.*—There was one case of smallpox in this town in January, 1903.

*Norridgewock.*—In 1903 there were six cases of smallpox and three houses were infected.

*Oakland.*—There were two cases of smallpox in Oakland in 1902, and in November, 1903, another outbreak occurred which resulted in four cases. Three of these cases were seen by the secretary of the State board at the request of the chairman of the board of selectmen. The physicians on the local board of health had made the diagnosis of smallpox, and as the cases were typical, though mild, there was no difficulty in confirming their opinion. The infection in the former year came from Canada, and the first man in the second outbreak received his infection in Skowhegan.

*Old Town.*—There were no cases of smallpox in Old Town in 1902; but in 1903, at the same time when smallpox prevailed in Bangor, a serious outbreak occurred in which there were 130 cases, but the epidemic was mastered in the spring of 1904. The secretary of the local board reports that as near as it is possible to tell, four of the cases originated in Bangor, three from Madison, and the balance of the imported cases came from the lumber camps. He says that none of the 130 persons who had smallpox had ever been vaccinated previous to their exposure to smallpox. The secretary of the State board of health was called to see a case on Indian Island in September, and again in November the proprietor in the hospital at Old Town requested me to visit that institution and to meet the local board of health in a consultation over a smallpox emergency in that institution. Dr. Woodcock, of the State board of health, was, through a part of the outbreak, employed by the city as consulting physician.

*Orland.*—Only one case of smallpox appeared in this town. That was in September, 1903. The man had been at work in Brewer and came home sick with smallpox. The disease was confined to the one house in which this case occurred.

*Orono.*—Concurrently with other Penobscot towns Orono had an outbreak of smallpox in 1903. There were 16 cases in all.

*Patten.*—There were no cases of smallpox in Patten in 1902, but May 20, 1903, the secretary of the State board was called to see a man quarantined on account of a suspicious eruptive disease that was found to be smallpox. The man had just come down from one of the drives and it was necessary to make arrangements for the vaccination of persons at houses at which he had stopped on the way down and to disinfect those houses. Two other cases occurred in the latter part of the year, and these were seen by the inspectors of the State board in consultation with the local board of health.

*Plymouth.*—In 1903 there were two cases of smallpox in Plymouth.

*Portland.*—The outbreak of smallpox which occurred in Portland in 1902 resulted in forty-eight cases with twenty-nine houses infected before the disease was stamped out. In 1903, one case of smallpox was reported.

*Presque Isle.*—A report on the smallpox outbreak in the Presque Isle region is given on a preceding page. The number of cases which occurred in Presque Isle in this epidemic is estimated at 200.

*Prospect.*—There was one case of smallpox in Prospect in October, 1903.

*Richmond.*—There were no cases of smallpox in Richmond in 1902, but as the secretary of the State board had learned that a certain family near the village had been exposed to infection he visited the village March 10 to notify the local board of health and to advise them. The local board arranged to send a physician out immediately to vaccinate the exposed family and a neighboring family. In 1903 the secretary saw with the health officer of the local board of health one case of smallpox in the village. Three other cases resulted.

*Rockland.*—June 9, 1902, Dr. Benjamin Williams, secretary of the local board of health, sent a telegram reporting a case of smallpox in the city. The woman who had the disease had just come from South Boston. She had never been vaccinated. This case was not promptly recognized as smallpox and the result was that a few other persons who were exposed came down with smallpox. November 15, of the same year, the following telegram was sent to the secretary of the local board of Rockland: "G. H. ———, from the schooner Charles Jeffries, has smallpox in Portland. Eruption came out yesterday. Stayed at ——— Hotel, Rockland, last night." This information was telephoned from Portland to the office by Dr. C. D. Smith, president of the board. Subsequent correspondence with the local board of health indicated that the clerk of this hotel and the stenographer came down with smallpox. Here again the nature of the disease was not determined promptly enough. Rockland had two cases of smallpox in 1903.

*Rockport.*—No cases of smallpox in 1902, but in 1903 there were three cases in the latter half of the year.

*Rumford.*—The secretary of the State board was called to Rumford Falls, May 4, in consultation with the board in regard to a case of smallpox. The case had been promptly quarantined in the papular stage, and the exposed persons were promptly vaccinated. The local board was advised that all exposed per-



sons be held until their vaccinations took and then be held out on parole, keeping them under careful observation 16 days at least. Another case of smallpox was subsequently found in the same house, and in the latter part of the year another case was found making three in all. Infection of the first case was supposed to have been brought from Canada, and the last case from Berlin Falls, N. H.

*Saco.*—There were 39 cases of smallpox in 1902 with 12 houses infected, and the following year, there were 13 cases with 7 infectious houses. February 24, 1902, the president and secretary of the State board met the local board of health of Saco and of Biddeford in a consultation in connection with an outbreak of smallpox. Six cases were then seen and there were histories of what it was feared had been mild cases of smallpox among the operatives of the mills. Again on the 8th of the following month, the secretary had a consultation with the local board of Saco.

*Sanford.*—The secretary of the State board went to Springvale February 15 and found that a suspicious case which had been quarantined was smallpox. The local board was advised to remove the man from the house in which he was to the smallpox hospital, to vaccinate the family, and keep all of the members under observation a sufficient length of time. The members of the family had not been near the patient. A few other persons who had been more intimately exposed for too long a time were to be kept in quarantine until the full period of incubation for smallpox had passed. Three cases constituted the total for 1902. In 1903, there were 9 cases in the early part of the year. The woman who started the last outbreak came from Biddeford bringing the disease with her and freely mingled with the French people. She was broken out, but said it was a skin humor.

*Scarboro.*—There were 2 cases of smallpox in Scarboro in the early part of 1902. February 20, Dr. Smith, president of the State board, visited Scarboro at the solicitation of the local board of health and found a man, twenty years of age, never vaccinated, who had a smallpox eruption in the late papular and early vesicular stage, becoming confluent on the face. Two weeks earlier, he was hauling wood from house to house in Portland in the lower part of the city where some cases of smallpox then

existed. Dr. Smith was called to that town again April 10 and on the 29th of the same month, the secretary inspected the two convalescent cases to see whether they were ready to be released from quarantine.

*Schoodic.*—Near this station on the Bangor & Aroostook, a suspicious case occurred which required a visit from Dr. Woodcock, member of the State board. From the results of his examination of the case, the doctor became satisfied that it was not smallpox, but the camp and all of its blankets and other equipments were disinfected by the use of formaldehyde. The men had all left the camp for another one at some distance away, and all had been vaccinated.

*Seboeis Plantation.*—The local board of health reported two cases of smallpox in a camp in the adjoining township No. 2, Range 8.

*Shirley.*—There was one case of smallpox in this town which came from a lumber camp in Blanchard.

*Skowhegan.*—Seven cases of smallpox in 1903, 5 houses being infected. October 22, at the request of the local board, the secretary of the State board visited Skowhegan and found a well marked case in a man who was already quarantined under the suspicion of the existence of smallpox. The man worked in the mill and was in a boarding-house in which many of the operatives boarded. The quarantine was put on the house at noon while the men were in to dinner. The local board was advised to remove the young man to the smallpox hospital out of town, to vaccinate all exposed persons, particularly all of the persons in the boarding-house, and all of the workmen in the mill where he had been at work. Arrangements were made with the brother of the young man who was with him to act as a nurse. November 3, a man and his boy were seen and found to have smallpox in a typical form. There was a history of earlier unrecognized cases, two of which were seen on the first visit to Athens, and it was quite probable that the total number of cases was somewhat in excess of seven.

*Stockholm Plantation.*—There were two cases of smallpox in this plantation in 1903, both in the same house.

*Thomaston.*—In this town, there were two cases of smallpox in 1903 in the same house.

*Turner.*—June 4, 1902, the secretary of the State board was called to Turner to see a suspicious case which proved to be chickenpox. In July and August, 1903, this town had 3 cases of smallpox.

*Veazie.*—Only two cases occurred in this town, and those were in the fall of 1903.

*Wade Plantation.*—In this plantation there were 44 cases of smallpox occurring in the first four months of 1903; or at least, it was not until this time that the local board of health were aware of the nature of the eruptive disease which had been present some little time before. A general report on this outbreak is included in that of the Presque Isle region.

*Warren.*—This town had two cases of smallpox in October and November of 1903. The infection was brought from the town of Camden.

*Washburn.*—One case of smallpox was reported to the State board of health from this town in 1902, and in 1903 Washburn had a severe epidemic in which 65 cases were cared for and 66 houses were disinfected. This was a part of the outbreak which is included with that of the Presque Isle region.

*Washington.*—This town had but one case of smallpox and that in March, 1902. The person who brought the disease came from outside the State stopping in Boston on his way home. He apparently contracted the infection before he entered the State.

*Waterville.*—This city had 8 cases of smallpox in 1902. The first case appeared in September and there were 7 cases in October. The family where these 7 cases occurred had recently been on an excursion to Canada and contracted the disease there. There was only one case in 1903.

*Westbrook.*—This city escaped with only one case of smallpox. That was in March, 1902. Smallpox had been reported in South Portland, and the young woman who had the disease in Westbrook had been to South Portland attending a dance and in due time after her return, she was taken down with smallpox. She had never been vaccinated.

*Winslow.*—There were 25 cases of smallpox in the autumn of 1902. In November of 1903, there were 2 cases. The outbreak of 1902 was brought by a family who had come from Canada, and in 1903, the infection came from Fairfield. The prompt

and intelligent secretary of that local board reports that "we have had many exposed cases of vaccinated persons, but never had one that had smallpox." Mr. Patterson had ample experience with smallpox in 1899.

*Winthrop.*—No cases of smallpox in 1902, but an outbreak occurred in the summer of 1903 which resulted in 8 cases. The history of the origin of infection which has been so frequently given in this State is that the family in which the disease occurred had just come from Canada.

*York.*—In this town there was only one case, that occurring in April, 1903. A baggage-master on the Boston & Maine Railroad from Boston to Amesbury, Mass., came home with the infection.



## NEW CIRCULARS.

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FORM 72.SMALLPOX,  
ITS PREVENTION AND RESTRICTION.

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ISSUED BY THE STATE BOARD OF HEALTH OF MAINE.  

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For some years, smallpox has been unusually prevalent almost everywhere. It has generally appeared in a mild form, though interspersed here and there with cases or outbreaks of a more malignant or fatal type. No matter how mild a form the disease may assume in any household, or in any town or township, it must be promptly controlled, and the State board of health requires every local board of health, every householder, and every person to do their part to prevent its spread. The principal measures for the prevention of the spread of smallpox are the following:

*Vaccination.*

The whole responsibility and the blame for the spread of smallpox rests upon persons who have never been vaccinated, or were vaccinated only long ago. Persons who are properly vaccinated have smallpox in no form, not even the mildest. Exceptions to that rule are no more frequent than to the rule that one attack of smallpox prevents subsequent attacks. Vaccination, if it could be universal in our State, would be an all sufficient safeguard against the trouble and the danger of smallpox. The unvaccinated person is a public danger. The unvaccinated person, family, or town must sometimes be discriminated against,

and must for the public safety suffer inconveniences and loss due to their want of vaccination.

Extremely irrational views regarding vaccination are held by a minority of the people. It is true there is the possibility of danger in every vaccination. So in every scratch or puncture from splinters of wood or from the claws of domestic pets there are possibilities of fatal blood poisoning. From every toy pistol which annually helps young America to vent his patriotism, the possibilities of tetanus are very much greater than in vaccination. The danger from vaccination is grossly exaggerated. The choice of vaccination is the rational choice of an evil infinitely lesser than the suffering, the trouble, the expense, and the danger, which would perennially surround us if everybody should shirk vaccination.

There is a minimum of trouble in the vaccination sore which is kept clean and free from irritation and disturbance. Keep the fingers from it. If, after six or seven days, an undue degree of inflammation surrounds the sore, ask the vaccinating or family physician for an antiseptic application for it.

#### *When an Outbreak Occurs.*

The first thing is to isolate the sick person at once. He is infectious from the beginning of his illness until every trace of the eruption is gone, and the skin is all smoothed off, and is then infectious until he has received a thorough disinfecting bath and has put on disinfected clothing.

The next thing is to vaccinate every person who has been exposed to infection, and that should be done quickly. Done soon enough, the vaccination will get ahead of smallpox and prevent it.

A person successfully vaccinated somewhat recently, and again vaccinated before beginning the service as nurse may safely be chosen to care for the patient.

#### *Rules for the Patient.*

If you know that you have been exposed to smallpox or the infection of smallpox, let the local board of health know it at once and be vaccinated as soon as possible. By so doing you may save much trouble for yourself, your friends, and your town.

If taken with the disease, remain where you are, letting the local board of health know about it so that they may make arrangements for the proper care of you. Even if you should have the disease in a mild form and should be able to travel or to work, it would be criminal to expose other persons to the infection. The infection from mild cases often produces the disease in a deadly form. The law provides a severe penalty in the shape of a fine and imprisonment for any person who, when he is infected with smallpox, mingles with the general public.

At the end of your sickness it will be the duty of the local board of health to arrange for the careful disinfection of your person, your clothing, and your rooms, so that, when at liberty, you may not endanger the public.

*Rules for the Family.*

The law says that whenever a householder knows or has reason to believe that any person within his family or household has smallpox he shall give notice to the local board of health of his town, and failing to do this, he is liable to the penalty which the law provides. The law further provides that no householder shall permit any person suffering from smallpox, or any clothing, or other property to be removed from his house, nor shall he carelessly carry about children affected with smallpox, or introduce infectious persons into other persons' houses, or permit such children under his care to attend any school, theater, church or any public place.

*Rules for Neighbors.*

Do not go into any house when there is a suspicion that smallpox exists. Even if you are vaccinated and may not take the disease, you would carry the infection in your clothing and would incur the penalty of the law.

As good citizens of your town, be careful in every way not to spread infection. It is easy to carry it in clothing or other articles. Even a letter sent from an infected family may give the disease to others. There is great danger of the spread of infection by cats or dogs who have access to persons sick with smallpox. Nothing is better adapted to the carrying of infection than the fur of these animals.

Please bear in mind that, in the matter of smallpox, you have a responsibility as a citizen of a community and of the State. If you fail to protect yourself by vaccination and have smallpox, have you not made a public nuisance of yourself? You have made unnecessary trouble and expense, and may endanger others. If you are foolish enough to want smallpox, your neighbor undoubtedly does not want it, and you have no right to force infection on him. Again, if your town does not promptly control its outbreaks of smallpox, it is jeopardizing other towns and is doing them a rank injustice. Cities may for their safety prohibit the erection of wooden buildings on certain streets. The obligatory vaccination laws of many states are a similar prohibition of inflammatory material. They are both exhibitions of the exercise of the same power—the police power of the State. Under the exercise of this power, whole blocks of buildings may be torn down or blown up to stop the progress

of a conflagration. In comparison the restraint of a man with smallpox, or a man whose clothing is infected with smallpox, or of an insane person who, brandishing a knife upon the streets, threatens the lives of others, is only a slight exhibition of the use of this same power. So do not regard the requirements of the health laws of the State as an unreasonable invasion of the personal rights of individuals. No person has a right to spread disease. "Public safety is the supreme law."

For him who might thoughtlessly or unwittingly spread infection this circular is published; but he who wilfully spreads smallpox, or other infection, richly deserves the full penalties of the law.

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#### CIRCULAR NO. 73.

#### STATE BOARD OF HEALTH OF MAINE.

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#### INFANT FEEDING.

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As a general statement it may be said that infants who are consigned to artificial feeding of any kind have their chances of living and of thriving lessened very much. The putting of a young infant upon artificial food is a perilous expedient justified only by a real necessity.

Next to exclusive breast feeding, the best and least dangerous method is the use of cow's milk properly prepared *and* breast milk. Feeding at the breast should be continued if possible even when it becomes necessary to help out with bottle feeding.

Feeding exclusively with cow's milk brings greater dangers, which may be diminished very much by a low temperature and strict cleanliness in the dairy and in the home, and by giving milk mixtures adapted to the needs of each individual child.

The most unsuitable and dangerous kinds of food are the various patent infant foods and other substitutes for milk. There is hardly ever a good reason for using them. They are unsuitable as an exclusive food. When milk is used, other preparations may be added which may be made in any home and these home preparations are cheaper and otherwise more desirable.



Rational artificial feeding thus resolves itself into the administration of milk mixtures adapted to the requirements of individual infants.

*Cow's Milk.*—Cow's milk is very different from human milk. Its digestion by the infant is rendered especially difficult and dangerous by its much greater percentage of curd and for the reason that the curd is firm and tough instead of being soft and flocculent as in breast milk. But with these disadvantages, fresh cow's milk properly prepared is by far the best substitute generally available for the natural food of the infant.

*Home Modification.*—As whole cow's milk is too dangerous for infant feeding, it must be changed or modified for the use of infants so that it may chemically and otherwise resemble human milk as closely as possible, and it must be adapted to the requirements and the capacities of each individual child. Milk for infant feeding is modified by dilution and by the addition of sugar and other material.

*Diluent.*—The dilution of the milk with water, while lessening the proportion of curd, modifies its properties but little. A very weak decoction of starch used as a diluent does, however, change the character of the curd in a marked degree, rendering it more flocculent and more easily digestible. Barley water and oatmeal water are most generally used. They should not be made stronger than is herewith stated. They should be made fresh every morning. Barley water is used in ordinary cases and oatmeal water when a slight laxative effect is required.

*Barley Water.*—To two tablespoonfuls of barley flour add enough of a quart of cold water to make a thin paste, then add the remainder of the quart of water; stir and boil fifteen or twenty minutes. Barley flour is more convenient to use than pearl barley. When the latter is used, the same proportions of cereal and water may be taken, but the boiling must be continued two or three hours, enough water being added meanwhile to keep the quantity up to one quart when the preparation is done. Strain.

*Oatmeal Water.*—Stir two tablespoonfuls of oatmeal into one quart of boiling water; cover and let it simmer for two hours. Replace the water as it evaporates. Strain.

In making these thin cereal gruels, wheat flour or rice flour may be substituted by using two tablespoonfuls of either to a quart of water.

*Sugar.*—Sugar, in the quantity indicated for each milk mixture is added as a food and to bring up that constituent to the quantity present in breast milk. Granulated cane sugar is rarely adulterated. Milk sugar is often impure. Cane sugar should be used unless a trustworthy guaranty of the purity of the milk sugar can be had. When cane sugar is used, somewhat smaller quantities may be added to the mixtures than are stated in this circular. Three tablespoonfuls of milk sugar, or two tablespoonfuls of granulated sugar make an ounce.

*Milk Mixtures.*—The following milk mixtures are those which are generally the most suitable for infants of the designated ages. For instance, in beginning the artificial feeding of infants within the first four days of life, it is unsafe to feed a mixture stronger than No. 2. The rule should be to begin with the weak mixture and work up only very slowly and to proceed very cautiously in any given case beyond the strength indicated for the age of the child. There is generally less danger in too great a dilution of the milk than in milk insufficiently diluted.

The milk for infant feeding should come from a dairy in which it is known that strict precautions are observed to insure cleanliness. The milk should be filled into quart bottles very soon after it is drawn, and it should be kept on ice and at a temperature preferably not above 45 degrees F. until it is fed to the child. At this low temperature, it should remain disturbed as little as possible before it is used. The requisite quantity of "top milk" may then be dipped or poured from the top of the bottle of milk. The top milk is best removed with a dipper like that shown in Figure 1. The first dipperful must needs be removed from the bottle with a spoon. The dipper holds one ounce.

The sugar added should be dissolved in the water or other liquid used for the dilution of the milk, and lastly the specified quantity of top milk should be added.

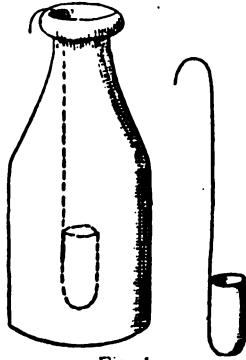


Fig. 1.

*Mixture No. 1.—For premature infants or temporarily for others with feeble digestive powers.*

From the bottle of milk dip off 7 ounces. Of this top milk add 5-8 of an ounce of it to 9 3-8 ounces of diluent in which 1-3 ounce of milk sugar has been dissolved.

Number of feedings in twenty-four hours, 12 to 18, at 1 1-2 to 2 hour intervals, 1-4 to 3-4 ounce at a feeding.

*Mixture No. 2.—For an infant from the first to the fourth day.*

From the bottle of milk dip off 9 ounces. Of this top milk, take 1 ounce, add it to 11 ounces of diluent in which 3-4 of an ounce of milk sugar has been dissolved.\*

Number of feedings in twenty-four hours, from 6 to 10, at 2-hour intervals, from 1 to 1 1-2 ounces at a feeding.

*Mixture No. 3.—For infants from the fifth to the seventh day.*

Dip off 9 ounces of top milk, add 2 ounces of it to 14 ounces of diluent in which 3-4 of an ounce of milk sugar has been dissolved.

Number of feedings in twenty-four hours, 10, at 2-hour intervals by day, from 1 to 2 ounces at a feeding.

*Mixture No. 4.—For the second week.*

Dip off 9 ounces. Add 3 ounces of it to 17 ounces of diluent and 1 ounce of sugar.

Number of feedings in twenty-four hours, 10, at 2-hour intervals by day, from 2 to 2 1-2 ounces at a feeding.

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\* The whole 9 ounces of top milk must be dipped off and mixed before the 1 ounce is taken for the mixture, otherwise the percentage of cream will be much too high.

*Mixture No. 5.—Third week.*

Dip off 9 ounces. Add 5 ounces of it to 19 ounces of diluent and 1 1-4 ounce of sugar.

Number of feedings in twenty-four hours, 10, at 2-hour intervals by day, from 2 to 3 1-2 ounces at a feeding.

*Mixture No. 6.—Fourth to eighth week.*

Dip off 9 ounces of top milk. Add 7 ounces of it to 21 ounces of diluent and 1 1-4 ounces sugar.

Number of feedings in twenty-four hours, 9, at 2 1-2 hour intervals by day, from 2 1-2 to 4 ounces at a feeding.

*Mixture No. 7.—Third month.*

Dip off 11 ounces of top milk. Add 9 ounces of it to 21 ounces of diluent and 1 1-4 ounce of sugar.

Number of feedings in twenty-four hours, 8, at 2 1-2 hour intervals by day, from 3 to 5 ounces at a meal.

*Mixture No. 8.—Fourth month.*

Dip off 12 ounces of top milk. Add the whole 12 ounces to 20 ounces of diluent and 1 3-4 ounce of sugar.

Number of feedings in twenty-four hours, 7, at 3-hour intervals by day, from 3 1-2 to 5 1-2 ounces at a meal.

*Mixture No. 9.—Fifth month.*

Dip off 15 ounces of top milk. Add the whole of it to 19 ounces of diluent and 1 3-4 ounce of sugar.

Number of feedings in twenty-four hours, 7, at 3-hour intervals by day, from 4 to 6 ounces at a meal.

*Mixture No. 10.—Sixth to tenth month.*

Dip from two bottles of milk 15 ounces from each. Of this 30 ounces of top milk mixed, add 18 ounces to 18 ounces of diluent and 1 1-8 ounce of sugar.

Number of feedings in twenty-four hours, 6, at 3-hour intervals by day from 5 to 8 ounces at a feeding.

*Mixture No. 11.—Eleventh month.*

From two bottles of milk dip 18 ounces from each. Of this 36 ounces of top milk, add 24 ounces of it to 14 ounces of diluent and 1 ounce of sugar.

Number of feedings in twenty-four hours, 5, at 4-hour intervals by day, from 6 to 9 ounces at a feeding.

*Mixture No. 12.—Twelfth month.*



From two bottles of milk dip 22 ounces from each. Of this 44 ounces of top milk, add 30 ounces of it to 10 ounces of diluent and 4-5 of an ounce of sugar.

Number of feedings in twenty-four hours, 5, at 4-hour intervals, from 7 to 9 ounces at a feeding.

*Mixing.*—In every household in which a baby is fed the following things should be at hand: a bottle of milk; barley water or other cereal gruel; boiling water; cream dipper; 8-ounce glass graduate; two pitchers for mixing; milk sugar or cane sugar; lime water when needed; funnel; feeding bottles; clean non-absorbent cotton; ice-box; baby food warmer; alcohol lamp; rubber nipples; bottle brushes; borax.

These things should be used for no other than their legitimate purposes and the utensils should be kept always cleansed and ready for use again in a place all their own. They should never be exposed to dust.

The whole quantity of food which will be required in twenty-four hours, should be mixed at once, thereby saving considerable time and trouble each day. If, for instance, we wish to make up Mixture No. 4, to be fed at 2-hour intervals (night interval of four hours), 2 ounces at a feeding, the whole quantity, 20 ounces, is, with the help of the funnel, filled into ten bottles, 2 ounces in each, care being had not to soil the mouth or neck of the bottle with the milk. These bottles are then stoppered with cotton, heated, if to be heated, and put into the ice-box where their temperature may be kept at about 45 degrees F.

*Feeding.*—When the time for feeding comes, one of the bottles is taken from the ice-box and, with the cotton plug in its mouth undisturbed, is placed in warm water for warming. Before feeding, the temperature of the food should be tested by dropping a few drops on the wrist, never by putting the bottle to the lips or tongue. On the wrist it should feel warm, not hot. A rubber nipple is then slipped over the mouth of the bottle, and before feeding, the bottle should be inverted to see that the milk drops slowly but does not flow in a stream.

*Care of Utensils.*—All things used in mixing the food should be well cleansed with cold water before the milk dries upon them and then should be thoroughly scalded and reversed to drain and dry and left in that position until they are used again. They should never be dried with the wiping cloth.

*Bottles.*—The bottles employed for feeding should be smooth inside and should have no angles which render cleansing difficult. One of the best forms is that of the long cylindrical bottle, or so-called feeding tube shown in Figure 2.



FIG. 2.

*Nipples.*—The best kind is a black rubber nipple of conical shape which can be turned inside out for cleansing and which slips over the mouth of the bottle. A number of these rubber tips should constantly be kept on hand. The bottle should be held for the infant and held in such a manner that the neck of the bottle may always be kept full, thus preventing drawing in and swallowing air. Suction should not continue a moment after the bottle is emptied. At the end of each feeding the rubber nipple should be rinsed in cold water and washed inside and out. It should then be immersed in a solution of borax, and remain in it until it is taken out to be scalded just before another feeding. In no case should a nipple with a long rubber tube be used. It is impossible properly to cleanse it and its menace to the lives of babies is a sufficient reason for the existence of the laws of some countries and some cities prohibiting its use.

*Quantity of Food.*—No absolutely fixed and fast rule can be laid down as to the quantity for each and every child. Therefore there is considerable latitude in the quantity indicated after each mixture. A frequent and serious error is feeding too much.

*Weaning.*—If the nursing child is showing a satisfactory gain in weight and development, breast milk alone suffices until the ninth or the tenth month. If, on the other hand, the mother's milk is found to be insufficient in quantity or of a faulty composition, and an intelligently prescribed dietetic and hygienic regimen for the mother fails to remove the difficulty, mixed feeding

or full artificial feeding should gradually be substituted. In beginning the artificial feeding, a milk mixture should at first be chosen which is much weaker than that indicated in this circular for infants of corresponding ages. For instance, if the child is eight months old, Mixture No. 4 or No. 5 may be given for a few days, or if the digestive power of the child is feeble, even a weaker mixture may be required. Preferably only one feeding a day from the bottle is to be given at first, one extra feeding to be added at intervals of four to seven days, the strength of the mixture meanwhile to be increased cautiously. The stomach of the child must be educated safely to digest cow's milk.

Always, if possible, the rule should be to wean gradually, and not to wean during hot weather if it can be avoided, and of transferring the child to a mixture of milk, barley water, and sugar, *and nothing more.*

*"And Nothing More."*—The experience of every intelligent physician is that the pernicious habit of many parents of giving the baby tastes of tea, coffee, candy, cake and various other stuff is the cause of many deaths even among children who are well past the months of life which are deemed especially critical. The nutritive value of milk is generally much under estimated. It is far more nourishing than the miscellaneous messes prematurely given to infants. Another reason for withholding these things is that, when the child has once acquired a taste for sweets and highly seasoned articles of food, he will no longer be content with the plain milk mixtures which are best for him. Thus the indulgence of the mother and her fear that the baby is not getting enough to eat often leads to digestive disorders and starvation in fact. The greatest kindness to the baby is not to create abnormal tastes, but to confine it to milk, or milk mixtures, *and nothing more.*

*Weaning from the Bottle.*—When the proper time comes for the introduction of other articles of food, the milk supply should be continued in plentiful quantity, and still later throughout childhood. Care should be had in weaning from the bottle, even after undiluted cow's milk is used, lest the child absolutely refuse to take milk in any other way. Children are thus sometimes deprived of their customary and needful supply of milk.

*Diet after Weaning.*—The proper time for feeding undiluted cow's milk does not come before the child is about a year old.

About the same time he may begin to take sparingly other articles of diet; oatmeal, arrowroot, wheaten grits, shredded wheat, or other cereals cooked for at least two hours and made into porridge with milk; milk with stale bread soaked in it; part of a soft-boiled egg; junket; soft custard; a little rice, tapioca, or sago pudding in small quantity.

Milk should remain the principal article of diet, and the list of things included in the child's dietary should be only very gradually increased.

*Sick Babies.*—If, in the presence of a summer diarrhea, the physician interdicts temporarily the use of milk in any form, rest assured that this practice is approved by the very best authorities. To stop all food at once is often a very necessary expedient. The dietetic management of the sick child is the province of the attending physician, but it may be said that, after the subsidence of the acute symptoms, milk should be resumed tentatively, and only in high dilution. If, for instance, the child has been on mixture No. 10, the resumption of the milk diet should be with a mixture not stronger than No. 3, given at long intervals. Then gradually increase to a mixture which corresponds to the age of the baby, or to one which he can take without digestive disturbance.

Babies often suffer from thirst when water, not milk or other food, is needed to quiet the crying.

"In general, a bottle baby should have less bulk of food and a higher dilution of milk in very hot weather than it is accustomed to under more favorable conditions."

*Heating Milk.*—If clean pure milk can be assured, heating it, sterilizing it, or pasteurizing it is not required. When deemed necessary, the milk, after it is filled into the feeding bottles, and stoppered with cotton, should be heated in a pasteurizer\* to 155 degrees or 160 degrees F., kept near that temperature twenty minutes, and then quickly cooled to 45 degrees F.

*Sources of Milk Supply.*—The milk from the ordinary dairy, bearing many thousand or a few million bacteria in each cubic centimeter † is not exactly "clean and pure," nor safe for infant

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\* Arrangements have been made with some druggists to keep pasteurizers and the other things enumerated under "mixing."

† A cubic centimeter is less than a quarter of a teaspoonful.



feeding. It is however entirely practicable for the intelligent dairyman, if he will, to produce clean milk and reduce the bacteria to a comparatively low number. For example: the milk from four dirty cows had 90,000 bacteria, while that from four clean cows milked by the same man had only 2,000. Dirty, dusty stables, or feeding dry hay just before milking increases the bacteria enormously. Milk in washed vessels had 28,600 bacteria; in vessels washed and then sterilized, 1,300.

Milk which had 3,746 bacteria when freshly drawn had 270,000 bacteria in 15 hours when kept at the temperature of 80 degrees F., and had an innumerable number and was coagulated in 27 hours. The same milk kept at 50 degrees F. had only 3,634 in 27 hours, and was still sweet with only 12,740 bacteria in 72 hours.

By observing intelligently planned rules to insure cleanliness, milk is now produced by many dairymen which is so clean and which, consequently, contains so low a number of bacteria that, with proper care and without sterilizing or pasteurizing, it keeps well and is suitable for infant feeding. Such milk, produced under competent supervision, should be available in all cities and larger towns.

The mixed milk from a number of cows is better and safer for the baby than the milk from a single cow. The milk from Jersey and Guernsey cows is not so good as that from the native herds.

*Condensed Milk.*—In some instances canned condensed milk is well borne by the stomach and may be given with advantage for a short period only. On journeys, for instance, it may be used diluted one part to twelve. For a continuous diet, however, condensed milk is unsuitable, and the hand-fed baby should be brought back as soon as possible to a properly modified mixture of fresh cow's milk. Like the patent infant foods generally it is deficient in fat and proteids and has an excess of sugar. On such diets the baby may be fat and yet actually starving for the want of very essential food elements.

*Limewater.*—When limewater is added to milk mixtures, five per cent., or one-twentieth of the mixture, is the customary quantity to be added. Limewater should not be added when the preparation is to be sterilized.

Limewater can be prepared in any household by placing a piece of unslaked lime the size of an egg in one gallon of water in an earthen vessel. Stir and let settle. Pour off the first water and add fresh. Keep covered to exclude the dust. Use from the top, being careful that the lime beneath is not disturbed and that the lime water poured off is perfectly clear. To replenish the supply add water, stir and let settle as before.

## CIRCULAR No. 74.

## STATE BOARD OF HEALTH OF MAINE.

ARRANGEMENT OF MILK MIXTURES ON THE  
PERCENTAGE BASIS.

Percentage in milk mixtures for infants of various ages according to Holt (1902).

AGE.	PERCENTAGE OF		
	Fat.	Sugar.	Proteids.
Mixture No. 1. Premature infants .....	1.00	4.00	0.25
2. First to fourth day.....	1.00	5.00	0.30
3. Fifth to seventh day.....	1.50	5.00	0.50
4. Second week .....	2.00	6.00	0.60
5. Third week .....	2.50	6.00	0.80
6. Fourth to eighth week.....	3.00	6.00	1.00
7. Third month.....	3.00	6.00	1.25
8. Fourth month .....	3.50	7.00	1.50
9. Fifth month .....	3.50	7.00	1.75
10. Sixth to tenth month .....	4.00	7.00	2.00
11. Eleventh month.....	4.00	5.00	2.50
12. Twelfth month.....	4.00	5.00	3.00
13. Thirteenth month.....	4.00	4.50	3.50

The following shows the percentage of fat and of proteids which may be expected to be present in top milks taken from good dairy milk containing 4 per cent. each of fat and proteids if the milk is bottled immediately after it is drawn, cooled promptly, and kept cool (preferably 45 degrees or 50 degrees F.) four hours before the top milk is dipped off:

7 oz.	top milk contain	16 per cent.	fat,	4 per cent.	proteids.
8	" " " "	14	" " " "	4	" " " "
9	" " " "	12	" " " "	4	" " " "
11	" " " "	10	" " " "	4	" " " "
15	" " " "	8	" " " "	4	" " " "
20	" " " "	6	" " " "	4	" " " "

*Quantity of Top Milk.*—To get the requisite quantity of top milk for a given mixture divide the total number of ounces of the proposed mixture by the figure which represents the number of dilutions (the number of times the proteid of whole milk exceeds that of the desired mixture).

*Example.*—We want 32 ounces of milk mixture, 3 per cent. fat, and 1 per cent. proteid. As the proteid is one-fourth of that of the top milk (or whole milk) we shall need one-fourth of 32, or 8 ounces as the quantity of top milk to be used. Or by rule-of-three: 4 proteid: 1 proteid: : 32 ounces whole mixture: 8 ounces quantity of top milk.

*Percentage of Top Milk.*—Then the top milk from which the dilution is to be made must have a percentage of fat as much larger than that of its proteid as the percentage of fat in the mixture required exceeds the percentage of its proteid. Thus when the percentage of the fat in the mixture to be prepared is

4	times the proteid use	16 per cent.	top milk.
3½	" " " "	14	" " " "
3	" " " "	12	" " " "
2½	" " " "	10	" " " "
2	" " " "	8	" " " "
1½	" " " "	6	" " " "

*Example.*—A 32-ounce mixture of 3 per cent. fat, and 1 per cent. proteid is wanted. As the fat is three times the proteid, the percentage of fat in the top milk to be used must be three times its (4 per cent.) proteid. A 12 per cent. top milk is therefore wanted (9 ounces from the top of the can). Or by rule-of-three: 1 proteid: 3 fat: : 4 proteid: 12 fat.

The percentage of sugar in these dilutions of milk may be considered the same as that of the proteids. If the mixture is one-fourth milk, there remains 1 per cent. of sugar in it; if one-half, it contains 2 per cent. of sugar. Practically it would do to add 5 per cent. (one-twentieth) of sugar to all mixtures containing less than 2 per cent. of proteid, thus giving a total of from 6 to 7 per cent.

When lime water is added 5 per cent. (one-twentieth of the mixture) is the usual quantity.

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Though there is considerable range of variation in the constituents of both normal breast milk and normal cow's milk, for practical purposes in infant feeding it suffices to accept the following as Rotch's statement of the composition of breast milk and of cow's milk.

Breast milk, 4 per cent. fat, 7 per cent. sugar, 1 per cent. proteids.

Cow's milk, 4 per cent. fat, 4.5 per cent. sugar, 4 per cent. proteids.



## ADDITIONS TO THE LIBRARY.

During the years 1902 and 1903 the following books, pamphlets, and journals were added to the library of the Board by exchange and by purchase.

## BOOKS.

- Abbott. The Principles of Bacteriology. Philadelphia and New York. 1902.
- Allen. Commercial Organic Analysis. Philadelphia. 1901. Vol. I.
- Allen. Commercial Organic Analysis. Philadelphia. 1901. Vol. II. Part 1.
- Allen. Commercial Organic Analysis. Philadelphia. 1901. Vol. II. Part 2.
- Allen. Commercial Organic Analysis. Philadelphia. 1901. Vol. III. Part 1.
- Allen. Commercial Organic Analysis. Philadelphia. 1901. Vol. III. Part 2.
- Allen. Commercial Organic Analysis. Philadelphia. 1901. Vol. III. Part 3.
- Allen. Commercial Organic Analysis. Philadelphia. 1901. Vol. IV.
- Blyth. Foods: Their Composition and Analysis. London. 1903.
- Buchka. Die Nahrungsmittelgesetzgebung im Deutschen Reiche. Berlin. 1901.
- Chapin. Theory and Practice of Infant Feeding. New York. 1902.
- Chester. A Manual of Determinative Bacteriology. New York. 1901.
- Corlett. The Acute Infectious Exanthemata. Philadelphia. 1901.
- Dorland. The American Illustrated Medical Dictionary. Philadelphia, New York, and London. 1901.

- Ernst et al. *Animal Experimentation*. Boston. 1902.
- Ewing. *Clinical Pathology of the Blood*. Philadelphia and New York.
- Eyre. *The elements of Bacteriological Technique*. Philadelphia and London. 1902.
- Goadby. *The Mycology of the Mouth*. London, New York and Bombay. 1903.
- Holt. *The Diseases of Infancy and Childhood*. New York. 1902.
- Hope & Brown. *A Manual of School Hygiene*. Cambridge. 1901.
- Jacobi. *Therapeutics of Infancy and Childhood*. Philadelphia and London. 1903.
- Judson & Gittings. *Infant Feeding*. Philadelphia. 1902.
- Koplik. *The Diseases of Infancy and Childhood*. New York and Philadelphia. 1902.
- Leffmann. *Examination of Water*. Philadelphia. 1899.
- Leffmann & Beam. *Food Analysis*. Philadelphia. 1901.
- Lehmann & Neumann. *Bacteriology*. Vol. I, Atlas. Philadelphia and London. 1901.
- Lehmann & Neumann. *Bacteriology*. Vol. II, Text. Philadelphia and London. 1901.
- Muir & Ritchie. *Manual of Bacteriology*. New York and London. 1903.
- Nothnagel. *Encyclopedia of Practical Medicine*.—Variola, Varicella, etc. Philadelphia and London. 1902.
- Robb. *Aseptic Surgical Technique*. Philadelphia. 1902.
- Rosenau. *Disinfection and Disinfectants*. Philadelphia. 1902.
- Ross. *Mosquito Brigades and How to Organize Them*. London. 1902.
- Simon. *A Manual of Clinical Diagnosis*. Philadelphia and New York. 1902.
- Stengel. *A Text-Book of Pathology*. Philadelphia, New York, and London. 1903.
- Tapffe. *Bacteriology*. Philadelphia and New York. 1903.
- Tiegler. *General Pathology*. New York. 1903.
- Tiegler. *Special Pathological Anatomy*. New York. 1898. Vol. I. Sec. 1-8.
- Tiegler. *Special Pathological Anatomy*. New York. 1898. Vol. II. Sec. 9-15.

- Vinrace. The War Against Consumption. London. 1901.  
 Wanklyn. Milk Analysis. New York. 1874.  
 Index-Catalogue of Surgeon-General's Office. U. S. A. Vol. VII, 2d series. 1902.  
 Index-Catalogue of Surgeon-General's Office. U. S. A. Vol. VIII, 2d series. 1903.  
 Katalog der Bibliothek des Statistischen amts der Stadt. Berlin. 1901.  
 Transactions of the Medical Association of the State of Alabama. 1903.  
 Transactions of the American Climatological Association. Vol. XVII. 1901.  
 Transactions of the American Climatological Association. Vol. XVIII. 1902.

## REPORTS.

- Colorado. Sixth Report of the State Board of Health. 1901-1902.  
 Connecticut. Twenty-fourth Annual Report of the State Board of Health. 1901.  
 Connecticut. Twenty-fifth Annual Report of the State Board of Health. 1902.  
 Florida. Thirteenth Annual Report of the State Board of Health. 1901.  
 Hawaii. (Ter.) Report of the President of the Board of Health. 1901-1902.  
 Indiana. Nineteenth Annual Report of the State Board of Health. 1899-1900.  
 Indiana. Twentieth Annual Report of the State Board of Health. 1901.  
 Kansas. First Biennial Report of the State Board of Health. 1901-1902.  
 Kentucky. Biennial Report of the State Board of Health. 1900-1901.  
 Maryland. Annual Report of the State Board of Health. 1901.  
 Massachusetts. Thirty-third Annual Report of the State Board of Health. 1902.  
 Michigan. Twenty-ninth Annual Report of the State Board of Health. 1901.

- Minnesota. Eleventh Report of the State Board of Health and Vital Statistics. 1899-1900.
- New Brunswick. Fifteenth Annual Report of the Provincial Board of Health. 1901.
- New Hampshire. Seventeenth Report of the State Board of Health. 1901-1902.
- New Jersey. Twenty-fifth Annual Report of the State Board of Health. 1901.
- New Jersey. Twenty-sixth Annual Report of the State Board of Health. 1902.
- New York. Twenty-first Annual Report of the State Board of Health. 1900.
- New York. Twenty-second Annual Report of the State Board of Health. 1901.
- Ohio. Fifteenth Annual Report of the State Board of Health. 1900.
- Ohio. Sixteenth Annual Report of the State Board of Health. 1901.
- Ontario. Twentieth Annual Report of the Provincial Board of Health. 1901.
- Pennsylvania. Sixteenth Annual Report of the State Board of Health. 1900.
- Pennsylvania. Seventeenth Annual Report of the State Board of Health. 1901. Vols. I-II.
- Quebec. Seventh Annual Report of the Provincial Board of Health. 1901.
- Quebec. Eighth Annual Report of the Provincial Board of Health. 1902.
- Vermont. Third Biennial Report of the State Board of Health. 1900-1901.
- Michigan. Thirty-third Annual Report on Births, Marriages and Deaths. 1899.
- Michigan. Thirty-fourth Annual Report on Births, Marriages and Deaths. 1900.
- New Jersey. Report of the Bureau of Vital Statistics. 1901.
- Ontario. Report on Births, Marriages and Deaths. 1900.
- Ontario. Report on Births, Marriages and Deaths. 1901.
- Rhode Island. Forty-eighth Registration Report. 1900.
- Rhode Island. Forty-ninth Report on Births, Marriages and Deaths. 1901.



- Baltimore. Report of Department of Public Safety. 1901.
- Boston. Twenty-ninth Annual Report of the Health Department. 1901.
- Boston. Report of Chief of Massachusetts District Police. 1901.
- District of Columbia. Report of the Health Officer. 1901.
- District of Columbia. Report of the Health Officer. 1902.
- Illinois. Report of the State Board of Health on Medical Education, and Official Register. 1903.
- Minnesota. Report of Veterinary Department of the State Board of Health. 1900-1903.
- San Francisco. Biennial Report of the Board of Health. 1898-1899 and 1899-1900.
- San Francisco. Annual Report of the Health Department. 1900-1901.
- Seventeenth Annual Report of the Bureau of Animal Industry. 1900.
- Eighteenth Annual Report of the Bureau of Animal Industry. 1901.
- University of Illinois. Report of Chemical Survey of the Waters of Illinois. 1897-1902.
- London. Thirtieth Annual Report of the Local Government Board. 1900-1901.
- London. Report of Local Government Board on Bubonic Plague. 1898-1901.
- Rapport présenté au Conseil Communal. Bruxelles. 1903.
- Santiago de Chile. Movimiento de la Casade Orates de Santiago en al Ano. 1901.
- Statistisches Jahrbuch der Stadt. Berlin. 1899.
- Statistisches Jahrbuch der Stadt. Berlin. Vol. XXVII. 1900-1902.

## PAMPHLETS.

- Bul. de L'Institut International de Statistique. Budapest. Vol. XIII.
- Croizet. Memorias del Laboratorio I de la Seccionde Dentistica Correspondientes al Ano. 1901. Santiago de Chile.
- Statistique Annuelle du Mouvement de la Population. Vol. XXXI. Paris. 1901.
- Nineteenth Annual Report of Superintendent of Health of Providence, R. I. 1901.

- Twelfth Annual Report of County and District Medical officer. Glasgow. 1902.
- Supplement to 38th Annual Report of Births, Marriages and Deaths in Dublin, Ireland. 1903.
- Forty-sixth Annual Report on Births, Marriages and Deaths. Providence, R. I. 1901.
- The Milk Supply of Two Hundred Cities and Towns. Washington.
- Proceedings of the 16th Annual Meeting, Conference of the State and Provincial Boards of Health. 1901.

## SANITARY AND OTHER JOURNALS.

- The Sanitarian. Brooklyn, N. Y. 1902-03.
- The Engineering Record. New York. 1902-03.
- The Sanitary Record. London. 1902-03.
- The Boston Medical and Surgical Journal. Boston. 1902-03.
- The Architects' and Builders' Magazine. New York and Chicago. 1902-03.
- Brooklyn Medical Journal. Brooklyn, N. Y. 1902-03.
- Medical News. Philadelphia. 1902-03.
- Medical Times. New York. 1902-03.
- The American Monthly Microscopical Journal. Washington, D. C. 1902-03.
- American Chemical Journal. Baltimore, Md. 1903.
- The Analyst. London. 1903.
- The Municipality. Madison, Wis. 1902-03.
- Modern Medicine. Battle Creek, Mich. 1902-03.
- Occidental Medical Times. Sacramento, Cal. 1902-03.
- Public Health. Philadelphia. 1902-03.
- The Medical World. Philadelphia. 1902.
- Journal of Medicine and Science. Portland, Me. 1902-03.
- The Virginia Medical Semi-Monthly. Richmond, Va. 1902-03.
- Journal of Hygiene. New York. 1902.
- Columbus Medical Journal. Columbus, Ohio. 1902-03.
- Philadelphia Medical Journal. Philadelphia. 1902-03.
- Pennsylvania Medical Journal. Pittsburg. 1902-03.
- Post-Graduate. New York. 1902-03.
- American Medicine. Philadelphia. 1902-03.

- Journal of Applied Microscopy. Rochester, N. Y. 1902-03.  
The Sanitary Home. Fargo, North Dakota. 1902-03.  
Dietetic and Hygienic Gazette. New York. 1902-03.  
Quarterly Journal of Inebriety. Hartford, Conn. 1902-03.  
Pediatrics. New York. 1902.  
American Physical Education Review. Boston. 1902-03.  
Journal of the New England Water Works Association. New  
London, Conn. 1902-03.  
Monthly Report of Climate and Crop Service. Boston, Mass.  
1902-03.  
Illinois Medical Bulletin. Chicago. 1903.  
Journal of the Massachusetts Association of Boards of Health.  
Boston. 1903.  
Monthly Bulletin of the Indiana State Board of Health. India-  
napolis. 1902-03.  
Monthly Bulletin of the Iowa Board of Health. Des Moines.  
1902-03.  
Michigan Monthly Bulletin of Vital Statistics. Lansing.  
1902-03.  
Bulletin of the North Carolina State Board of Health. 1902-03.  
Bulletin of the Virginia Board of Health. Richmond. 1902-03.  
Monthly Bulletin of the State Board of Health of Rhode  
Island. 1902-03.  
Ohio Sanitary Bulletin, State Board of Health of Ohio.  
1902-03.  
The Vermont Medical Monthly. Burlington. 1902-03.  
The Municipal World. St. Thomas, Ont. 1902-03.  
New Hampshire Sanitary Bulletin. Concord, N. H. 1902-03.  
Journal of the Western Society of Engineers. Chicago.  
1902-03.  
Public Health Reports. Washington, D. C. 1902-03.  
The Journal of State Medicine. London. 1902-03.  
Public Health. London. 1902-03.  
Health. London. 1902-03.  
Revue D'Hygiene. Paris. 1902-03.  
Zeitschrift für Hygiene. Berlin. 1902-03.  
Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege.  
Braunschweig. 1902-03.  
Deutsche Medicinische Wochenschrift. Berlin. 1902.

Zeitschrift für Schulgesundheitspflege. Hamburg. 1902-03.

Centralblatt für Bakteriologie und Parastienkunde. Jena.

1902-03.

Giornale della Reale Societa Italiana D'Igiene. Milano. 1902-03.

Hygienische Rundschau. Berlin. 1902-03.

Boletin del Consejo Superior de Salubridad. Mexico. 1902-03.



## ABSTRACTS FROM THE REPORTS OF THE LOCAL BOARDS OF HEALTH.

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ABBOT. 1903. Have had no business this year.—E. E. Hescock, Sec.

ACTON. 1902. No nuisances removed. Ten cases of diphtheria. Antitoxin has been used this winter with good success. About three-fourths of the people in this town are protected by vaccination. Disinfection is done by the householder if able; if not, at the expense of the town.

1903. No infectious diseases.—B. J. Grant, Sec.

ADDISON. 1903. Nothing reported for the year.—U. W. Curtis, Sec.

ALBANY. We have been very free from contagious diseases the past two years. Free vaccination was offered about three years ago.—C. G. Beckler, Sec.

ALBION. 1902. No infectious diseases reported. Only a small per cent. of the people in the town have been vaccinated. Antitoxin is supplied to poor families afflicted with diphtheria at the expense of the town.—Chas. W. Abbott, Sec.

1903. One case typhoid fever during the year. Disinfection is done by the town if householder is unable to pay.—Wm. A. Varney, Sec.

ALEXANDER. 1903. I am glad to say that this town has been very fortunate in the way of sickness. We have not had any contagious diseases of any kind.—A. H. Perkins, Sec.

ALFRED. Nothing to report for the two years except one case of scarlet fever in 1903. About one-half of our town are well protected by vaccination. If disinfection is done by householder, the board supervises. The town pays for work of this kind unless the householder prefers to.—Dr. C. E. Lander, Sec.

ALNA. Nothing reported for either year.—A. B. Erskine, Sec.

ALTON. 1902. No contagious or infectious diseases.—H. L. McKechnie, Sec.

AMHERST. No cases of contagious diseases with the exception of four cases of scarlet fever in 1902 and one of typhoid in 1903.—D. E. Richardson, Sec.

AMITY. We have had very little to do the past year except looking after a few exposures to smallpox which we immediately put in quarantine until all danger was past. About 50% of the people are vaccinated here.—George E. Nickerson, Sec.

ANDOVER. 1902. Three nuisances removed. Nothing reported except eight cases of glanders which the State Cattle Commissioners promptly attended to.

1903. No nuisances reported. Two cases of typhoid fever; also one case of glanders. Free vaccination was offered this last year, and about 40% of the people are well protected.—Dr. F. E. Leslie, Sec.

ANSON. 1902. Ten nuisances reported; all removed. No infectious diseases. Our sewerage system has been improved during the past year.—J. P. Spooner, Sec.

1903. Nine nuisances reported, seven of which were removed. Fifty cases of diphtheria. I have had the bushes cut down along the banks of the Gatchell brook and the rocks taken from its bed and piled up on the banks, and all the filth and brush hauled off, that which could be burned being put in one place, and the rest buried. Have also had notices printed forbidding all persons dumping their offal of any description in the brook on penalty of law.—John P. Roberts, Sec.

APPLETON. Nothing reported for two years. About one-half of the people in the town are vaccinated.—V. O. Keller, Sec.

ARGYLE. 1902. No cases of infectious diseases during the year. Not more than one-third of the people are protected by vaccination.

1903. Three nuisances removed. Five cases of smallpox and one of typhoid fever were reported to the board. One case of smallpox occurred in a school. The school was closed at once, the school-books were burned, and the schoolhouse disinfected. All of the children were vaccinated and not another case occurred in this school. The work of disinfection is done at the expense of the town.—J. M. Freese, Sec.

ARROWSIC. There have been no outbreaks of contagious diseases the past two years.—J. McFadden, Sec.

ASHLAND. 1902. Three nuisances reported and removed. Eighteen cases of diphtheria, four of typhoid, and one of scarlet fever. Free vaccination has been offered every year during the past eight years. Over 80% are well protected by vaccination.

1903. Three nuisances removed. Forty-six cases of smallpox, one of diphtheria, and one of typhoid fever were reported to the board.—H. L. Dobson, M. D., Sec.

ATHENS. 1903. Two nuisances removed. Thirty-six cases of smallpox and one of diphtheria. Disinfection done at the expense of the town.—L. E. Jacobs, Sec.

ATKINSON. Have had nothing worth mentioning for two years. We have quite a healthy town and hope it will continue so.—Geo. D. Lyford, Sec.

AUBURN. 1902. Seven nuisances removed. Five cases of diphtheria, twenty of scarlet fever, and eight of typhoid.

1903. Three nuisances reported to the board; all removed. Four cases of smallpox, ten of diphtheria, fifteen of scarlet fever, and two of typhoid fever. More than 90% of the population are protected by vaccination. In doing disinfection, the city pays all the bills.—A. M. Peables, M. D., Sec.

AUGUSTA. 1903. Ten cases of smallpox, forty-seven of scarlet fever, two of diphtheria, and ninety-one of typhoid fever; also one case of measles.—J. F. Young, Sec.

AURORA. 1902. Have had no occasion to do any work. When disinfection is done by the board, the bills are paid by the householder.—Chas. P. Silsby, Sec.

1903. No infectious diseases.—H. T. Silsby, Sec.

AVON. No contagious diseases except one case of smallpox in 1903. The work of disinfection is done by the householder, if able.—Fred Morton, Sec.

BAILEYVILLE. Have had nothing to do for two years.—Michael Maloy, Sec.

BALDWIN. One nuisance removed in 1903. As soon as we are notified of any cases of contagious disease, we investigate at once, and see that the necessary precautions are taken. Free vaccination was offered in 1902. A large percentage of the people are protected by vaccination.—E. H. Chadbourne, Sec.



BANCROFT. No infectious diseases. There have been no changes or improvements. About 75% of the town were vaccinated in 1903.—A. A. Babkirk, Sec.

BANGOR. 1902. One hundred and fifty nuisances reported; all have been removed or discontinued. Ten cases of diphtheria and fifteen of scarlet fever; of the total twenty-five cases, eight proved fatal. After any contagious disease, disinfection is always done by the secretary, the householder paying for the material used.

1903. Seventy-five nuisances removed. One hundred and sixty-one cases of smallpox, fifty of typhoid fever, six of diphtheria, and three of scarlet fever have been reported. We have laid two thousand feet of new sewer this year. Over half of this was a large trunk sewer in the western part of the city to get drainage for that locality. This means improvements in several ways in doing away with drains. About three-fourths of the people are well protected by vaccination.—John Goldthwaite, Sec.

BARING. We have been remarkably healthy for some years. Father Time is the cause of most of the deaths. There were two cases of scarlet fever in 1903. Disinfection is done by the householder under the supervision of a doctor or a member of the board of health.—Edward Chase, Sec.

BARNARD PLANTATION. No cases of infectious diseases with the exception of eleven cases of scarlet fever in five families in 1902.—M. C. Rankin, Sec.

BATH. 1902. Twelve nuisances reported; ten removed. Five cases of diphtheria, five of typhoid fever, and twenty of scarlet fever. That part of the disinfection done by an agent of the board is paid for by the city.

1903. Fifteen nuisances reported, ten of which were removed. Fifty-six cases of diphtheria, seven of scarlet fever, and five of typhoid. In cases of diphtheria, antitoxin is supplied to poor families at the expense of the city. I personally know of one case where a family moved into a tenement infected with tuberculosis and three of the children in that family died of that disease.—Dr. E. J. Marston, Sec.

BEDDINGTON. 1902. We have had no contagious diseases for the past five years.—Chas. S. Oakes, Sec.



1903. No nuisances reported. No infectious diseases with the exception of one case of diphtheria.—Guilford Small, Sec.

BELFAST. 1902. Eleven nuisances reported and six removed. Two cases of diphtheria, six of scarlet fever, and one of typhoid. Free vaccination was offered about four years ago and about 90% of the people are well protected by vaccination.—Dr. E. L. Stevens, Sec.

1903. Fourteen nuisances reported; eleven removed. Three cases of smallpox, six of diphtheria, and thirty-eight of scarlet fever. The board has recommended that all open public drains shall be covered and that two streets which have no sewer system—only open drains—shall be flushed thoroughly twice weekly during the summer months. I received notice of a case where the father recently died of tuberculosis. The attending physician also reported that the oldest child, aged 17, had incipient tuberculosis taken from living in the same house.—Dr. John Stevens, Sec.

BELGRADE. No contagious diseases except two cases of diphtheria in 1902 and two of scarlet fever in 1903. When cases of infectious disease occur, the physician in charge of the case does the disinfection at the expense of the town.—James Tebbetts, Sec.

BELMONT. 1903. No contagious diseases.—F. A. Marriner, Sec.

BENEDICTA. 1903. Twenty cases of smallpox, one of scarlet fever, and one of typhoid. We use a generator and disinfect with formaldehyde gas. If a householder does the disinfection, a member of the board supervises it. All disinfection is at the expense of the householder.—E. J. Crowe, Sec.

BENTON. 1902. Two nuisances removed. No contagious diseases except six cases of typhoid fever. Disinfection is done at the expense of the town.

1903. One nuisance removed. No infectious diseases.—A. L. Plummer, Sec.

BERWICK. 1902. One nuisance reported and removed. One case of diphtheria. We ordered several premises to be cleaned and rubbish removed.

1903. Three nuisances reported; two removed. One case of smallpox and one of scarlet fever. About four-fifths of the people have been vaccinated.—Dr. H. V. Noyes, Sec.

BETHEL. 1902. No nuisances reported. One case of smallpox and three of typhoid fever. About half the population is well protected by vaccination. The case of smallpox was disinfected at the expense of the town; other cases at the expense of the householder. Some additions have been made to the sewer system in Bethel village.

1903. Ten cases of diphtheria and one of typhoid fever. The sewer system has been extended considerably until nearly all streets are included, although there still remain some to be added. The people, it would seem, have been more careful and neat about their premises and there has been a greater interest manifested in maintaining better sanitary conditions. No epidemic has prevailed to any extent. Our excellent water system and pure water are conducive to health, we think, and materially decrease the number of stomach and other disorders which are commonly attributed to impure water. We think sanitary conditions in town excellent and that the people are each year becoming better educated up to modern requirements.—E. C. Park, Sec.

BIDDEFORD. 1902. Forty-nine nuisances reported; thirty-eight removed. Sixty-five cases of smallpox, thirteen of scarlet fever, thirty-six of typhoid, and seven of diphtheria. Seventy-five per cent. of the people are well protected by vaccination. All disinfection has been done at the expense of the city. We have required some twenty property owners where there were poor vault accommodations to enter the sewer. Good progress has been made in building a large sewer outlet which will take several years to complete. All cellars that were filthy and came under our observation were cleaned and disinfected.—N. P. Renouf, Sec.

1903. Forty-three nuisances removed. Thirty-one cases of smallpox, sixteen of scarlet fever, eighty-eight of typhoid fever, and seven of diphtheria.—Thomas F. Carey, Sec.

BIGELOW PLANTATION. 1902. No contagious diseases.—C. E. Savage, Sec.

BINGHAM. No infectious diseases during the two years. Two nuisances removed in 1903.—I. C. Pierce, Sec.

BLAINE. No contagious diseases except four cases of scarlet fever in 1902 and three in 1903. The local board of health has

provided itself with a formaldehyde lamp which is used for disinfecting buildings after contagious and infectious diseases. The board has been able in the last three or four years to do more efficient work, as the public are being educated in the matter of preventive measures, and appreciate more the efforts of the board for the prevention and suppression of contagious diseases. However, we frequently meet with determined opposition and the strong arm of the law is necessary at times to aid us in our work.—Dr. A. J. Fulton, H. O.

BLANCHARD. 1903. Five cases of smallpox. About 40% of the town are protected by vaccination. Disinfection is done at the expense of the town.—E. P. Blanchard, Sec.

BLUEHILL. No infectious diseases during the two years except thirteen cases of scarlet fever in 1902 and five of typhoid in 1903. The chairman of the local board of health has entire charge of the disinfection of infected houses, the work being done at the expense of the town.—Dr. R. P. Grindle, Sec.

BOOTHBAY. 1902. Four nuisances removed. Two cases of diphtheria, but none of scarlet fever or typhoid.

1903. Three nuisances reported and removed. No infectious diseases except five cases of diphtheria. About three-fourths of the people in this town are protected by vaccination.—Byron Giles, Sec.

BOOTHBAY HARBOR. 1902. Two nuisances removed. Ten cases of diphtheria and six of typhoid fever. The disinfection is done at the expense of the town if the householder is poor and unable to pay.

1903. Thirty-two cases of diphtheria, two cases of scarlet fever, and two of typhoid reported. Antitoxin has been freely used in all cases of diphtheria with so good results that of the thirty-two cases we have lost but one, and that was a sickly child of two years.—A. P. Wylie, Sec.

BOWDOIN. One nuisance removed in each year. No contagious diseases reported except one case of smallpox, one of diphtheria, and five of scarlet fever in 1903. One-third of the town are well protected by vaccination.—W. B. Chase, Sec.

BOWDOINHAM. 1902. One nuisance removed. No infectious diseases. Formaldehyde gas is used for disinfection.



Most of the disinfection is done at the expense of the householder, as far as practicable.—Lewis M. Fulton, Sec.

BOWERBANK PLANTATION. 1903. One case of diphtheria and one of scarlet fever.—B. L. Glover, Sec.

BRADFORD. The board had no work of any kind except three cases of scarlet fever in 1902 and one nuisance reported in 1903 which was removed.—L. W. Coy, Sec.

BRADLEY. 1902. One case of scarlet fever and two of typhoid. Our little village is well drained. Otter stream passes on the east and on the west the Penobscot river. The citizens keep their premises clean and neat by carting away and burning the debris. Promptness in isolating and disinfecting the case of scarlet fever prevented the spread of the disease. Every precaution was taken and no pains spared to prevent the spread of typhoid fever. The houses were well fumigated at the expense of the town.

1903. One case of typhoid fever, but no other infectious diseases. There have been no improvements or changes of any importance.—Ruel S. Carter, Sec.

BREMEN. 1902. Nothing to report.—Wm. B. Hilton, Sec.

1903. No infectious diseases.—James Donnell, Sec.

BREWER. 1902. Four or five nuisances reported; some of them were removed. Four cases of diphtheria and twenty of typhoid fever. In the cases of diphtheria, antitoxin was used with good results.

1903. Six nuisances reported; all removed. Forty-eight cases of smallpox, three of diphtheria, ten of scarlet fever, and eighteen of typhoid. The disinfection is usually done by the local board, the family paying when able.—W. H. Gardner, Sec.

BRIDGEWATER. 1902. Three nuisances removed. No infectious diseases. About nine-tenths of our people are protected by vaccination.

1903. Three cases of diphtheria and three of scarlet fever. I have personally attended to the disinfection using formaldehyde and a good generator, the disinfection being done at the expense of the town.—E. B. Morton, Sec.

BRIDGTON. 1902. Two nuisances removed. Five cases of smallpox, seven of scarlet fever, and five of typhoid; also one case of chickenpox reported.



1903. Eighteen cases of diphtheria, one of scarlet fever, and two of typhoid. Disinfection is done at the expense of the town.

—I. S. Webb, Sec.

BRIGHTON PLANTATION. 1902. Nothing to report.—Gilbert L. Forbes, Chr.

1903. Two nuisances reported and removed. Six cases of smallpox, but no other infectious diseases.—L. D. Mathews, Sec.

BRISTOL. 1902. Two nuisances reported; one removed. No contagious diseases. We think the people are more careful of sanitary conditions than a few years ago.—Geo. E. Little, Sec.

1903. Two nuisances removed. Four cases of diphtheria and two of scarlet fever. About 25% of the people are vaccinated.—J. F. Coombs, Sec.

BROOKLIN. 1902. One nuisance removed. Eight cases of scarlet fever and one of measles. Free vaccination is offered each year and 40% of the people in the town are protected by vaccination. We have used formaldehyde for disinfection of houses and rooms this year for the first time; so far, with satisfactory results.

1903. Since the organization of the board, contagious disease outbreaks have decreased steadily until such cases are very rare. When a case does occur, it is generally dealt with promptly and seldom spreads beyond the house where the outbreak occurs. The nearest we have had this year has been a few cases of a mild form of pneumonia. Of course, these are always dangerous, but at present all the cases are recovered or nearly so. Notwithstanding the severe drought of the past summer and autumn, we have had no cases of typhoid as is usually the case. Neither have there been any cases of scarlet fever or diphtheria.—E. P. Cole, Sec.

BROOKS. 1903. One case of typhoid fever is all we have to report for the past year.—N. R. Cook, M. D., Sec.

BROOKSVILLE. Nothing to report for the two years except seven cases of scarlet fever and one of typhoid in 1903. Only 10% of the inhabitants are protected by vaccination.—Dr. Franklin Farrow, Sec.

BROOKTON. No infectious diseases for two years.—A. O. Fish, Sec.

BROWNFIELD. 1903. No contagious diseases.—Dr. H. F. Fitch, Sec.

BROWNVILLE. 1902. Ten nuisances reported; all have been removed. Two cases each of scarlet fever and typhoid.—T. W. Pratt, Sec.

1903. Four nuisances reported; three removed. Two cases of smallpox. At the time of the outbreak of smallpox, we built a pest house. We took care of thirty people who had been exposed, giving them a bichloride bath and disinfecting all their clothing as well as the different houses.—E. A. Chase, Sec.

BRUNSWICK. 1902. Thirteen nuisances removed. One case of smallpox, twelve of diphtheria, twenty-six of scarlet fever, and one of typhoid. In cases of infectious disease, the householder pays the bills for disinfection except in cases where they are unable to pay.—Chas. H. Cumston, M. D., Sec.

BUCKFIELD. Nothing to report for either year.—Dr. H. M. Heald, H. O.

BUCKSPORT. 1902. Two nuisances removed. No infectious diseases with the exception of two cases of typhoid fever. Disinfection is done at expense of householder when able to pay; otherwise, at expense of town.—Dr. G. H. Emerson, Chr.

1903. One nuisance reported and removed. Two cases of smallpox and seven of scarlet fever. The board this year purchased a formaldehyde generator and find it a great improvement over the old methods of fumigation.—Dr. George N. Towle, Sec.

BURLINGTON. Two nuisances were removed during each year and there were six cases of smallpox in 1903.—Chas. Barker, Sec.

BURNHAM. No contagious diseases for two years.—F. A. McAllister, Sec.

BUXTON. 1902. Two nuisances removed. No infectious diseases except seven cases of typhoid fever. After cases of infectious diseases, the board disinfects the house and requires the householder to pay for the same.

1903. One nuisance removed. Four cases of diphtheria and nine of typhoid fever. In the houses where diphtheria occurred, the rooms and articles were disinfected with formaldehyde.—Dr. V. C. Totman, Sec.

BYRON. No contagious or infectious diseases.—H. H. Richards, Sec.

CALAIS. 1902. Four nuisances reported; all removed. Ten cases of diphtheria, two of scarlet fever and eight of typhoid. Probably from 60 to 75 per cent. of the people in this city are well protected by vaccination. When free vaccination was offered more than four hundred persons were vaccinated and other vigorous measures were taken to prevent an inroad of smallpox—and it did prevent it. I do not know that we have made any special improvements that are worth mentioning. The ten cases of diphtheria were scattered through the year. The disease never became epidemic. All the cases were easily controlled by the prompt use of antitoxin.

1903. Ten nuisances removed. Three cases of diphtheria, one of scarlet fever, and five of typhoid. The disinfection is done by the secretary as a part of his regular duty. No charge is made for it.—W. S. McKellar, M. D., Sec.

CAMBRIDGE. Nothing to report for two years with the exception of one case of scarlet fever and four of typhoid in 1903.—F. J. Hersey, Sec.

CAMDEN. 1902. Fourteen nuisances reported; nearly all removed. One case of diphtheria, forty-three of scarlet fever, and two of typhoid.

1903. Two cases of scarlet fever and three of typhoid.—A. Buchanan, Sec.

CANAAN. 1902. Two nuisances removed. Nine cases of diphtheria, three of scarlet fever, and one of typhoid.

1903. Three nuisances reported and removed. Eight cases of scarlet fever and four of typhoid.—Dr. L. W. Shean, Sec.

CANTON. Nothing reported except two nuisances removed in 1902; also one case of scarlet fever during that year, and two cases in 1903. Ninety per cent of the people are well protected by vaccination.—H. T. Tirrell, Sec.

CAPE ELIZABETH. 1902. One nuisance removed. Ten cases of diphtheria were all the cases of infectious disease during the year.

1903. Two nuisances removed. No infectious diseases reported to the board except one case of diphtheria. The board of health does the disinfection after infectious diseases, the town paying for the work and the householder for the formaldehyde.—Edward F. Hill, Sec.

CARATUNK PLANTATION. 1902. Nothing to report.—E. A. Sterling, Sec.

1903. No contagious diseases.—J. H. Carbino, Sec.

CARIBOU. 1902. No nuisances reported. One case of diphtheria and two of typhoid fever.

1903. Three nuisances reported; two removed. Sixty cases of smallpox, one of diphtheria, and four of typhoid. About 66 2-3% of the population have been vaccinated.—W. E. Sincock, M. D., Sec.

CARMEL. No infectious diseases in either year except two cases of smallpox and two of typhoid fever in 1903. The householder is required to disinfect his own house under the direction of the attending physician.—F. A. Simpson, Sec.

CARROLL. 1902. We have had no infectious diseases in town this year.—Hiram Stevens, Sec.

1903. Nothing to report for the entire year.—D. W. Lindsay, Sec.

CARTHAGE. No contagious diseases reported for two years.—C. F. Eaton, Sec.

CARY PLANTATION. 1902. No infectious diseases.—David A. Moore, Sec.

CASCO. 1903. Two nuisances removed. No cases of contagious diseases.—Leland H. Poore, M. D., Sec.

CASTINE. 1902. Two nuisances removed. Three cases of scarlet fever. The work of disinfection is done at the expense of the town.

1903. No contagious diseases. We have surveyed the town for a thorough system of sewerage in addition to what we already have.—Dr. S. J. Wallace, Sec.

CASTLE HILL. 1903. Twenty cases of smallpox and three of typhoid fever. We have not made many changes or improvements, but we have been very lucky in regard to contagious diseases. When a case is reported, we attend to it at once and do the best we can, and have always had very good success.—Arthur A. Tarr, Sec.

CENTERVILLE. We have not had any work for two years.—Charles W. Foster, Sec.

CHAPMAN PLANTATION. 1902. There have been no infectious diseases in this plantation for the past year except one case



slow typhoid, three of measles, and several cases of whooping cough.

1903. Eighteen cases of smallpox and one of diphtheria. About 50% of the people are protected by vaccination. Disinfection is done by agents of the board at the expense of the plantation.—E. C. McLaughlin, Sec.

CHARLESTON. 1902. Two cases of scarlet fever and one of typhoid. We have tuberculosis to a very small extent here. Three families only, to my knowledge, have suffered with it, several members of each dying. Due precautions were taken and it has not spread outside of these families. All the buildings which have been recently built have better ventilation and plumbing than the older ones.

1903. Two cases of scarlet fever and one of typhoid. The expenses for disinfection are charged to the town and are then collected from the householder by taxes if he is able to pay; otherwise, the town pays them.—Dr. G. B. Noyes, Sec.

CHARLOTTE. 1903. One case of typhoid fever, but none of any other contagious disease.—F. J. Sprague, Sec.

CHELSEA. No infectious diseases for two years with the exception of four cases of scarlet fever and two of typhoid.—J. S. Tenney, Sec.

CHERRYFIELD. 1902. No nuisances reported. Four cases of diphtheria and four of typhoid fever. Free vaccination was offered in 1900 and about 25% are well protected by it.

1903. Twelve cases of diphtheria and six of typhoid fever. The board this year decided to use antitoxin in all cases and charge it to the town allowing individuals to pay for it when able.—Dr. W. A. Van Wart, Sec.

CHESTER. No infectious diseases. In cases of scarlet fever or diphtheria that have taken place in our town, the local board of health has required the householder to remove all clothing from the house and thoroughly cleanse the same, the board supervising the work.—J. D. Kyle, Sec.

CHESTERVILLE. 1902. There have been no cases of infectious diseases since the board was organized.—A. H. Black, Member.

1903. Twenty cases of smallpox and one of diphtheria.—A. F. Fellows, Sec.

CHINA. 1902. One nuisance removed. No infectious diseases except two cases of typhoid fever. Ninety per cent of the inhabitants are well protected by vaccination.

1903. One nuisance reported and removed. Four cases of scarlet fever and two of typhoid. All disinfection is done at the expense of the town.—I. T. Merrill, Sec.

CLIFTON. 1902. There have been no contagious diseases in our town during the year.—F. W. Bowden, Sec.

1903. One case of smallpox and one of typhoid fever.—R. G. Chick, Sec.

CLINTON. 1902. Four cases of diphtheria are the only cases of infectious disease reported during the year.

1903. Three nuisances removed. Two cases of smallpox, two of diphtheria, and one of scarlet fever. About 25% of the people are well vaccinated.—John W. Waldron, Sec.

CODYVILLE PLANTATION. There have been no contagious diseases for two years.—Hiram Cochrane, Sec.

COLUMBIA. No infectious diseases except two cases of typhoid fever in 1902.—John E. Stewart, Sec.

COLUMBIA FALLS. Nothing to report except one nuisance removed, three cases of scarlet fever, and one of typhoid in 1902, and one case of typhoid in 1903.—G. L. Bucknam, Sec.

CONCORD. Nothing to report for two years except one nuisance which was removed in 1902.—George Berry, Sec.

COOPER. We have not had any work to do in our town during the past two years.—William H. Morton, Sec.

COPLIN PLANTATION. 1902. There has not been a case of contagious disease in this plantation for the past year.—F. T. Blackwell, Sec.

CORINNA. 1902. Three nuisances removed. Five cases of scarlet fever in three families.

1903. Three nuisances reported; all removed. No infectious diseases.—J. H. Winchester, Sec.

CORINTH. No contagious diseases except one case of typhoid fever in 1902 and two of diphtheria, one of scarlet fever, and one of typhoid in 1903.—W. E. Jordan, Sec.

CORNISH. 1902. Two nuisances reported; one removed. Two cases of diphtheria and four of typhoid fever.—Dr. George W. Weeks, Sec.

1903. Three cases of typhoid fever. The town usually pays for the disinfection after infectious diseases.—Dr. S. G. Sawyer, Sec.

CORNVILLE. 1903. Seventeen cases of smallpox, but none of diphtheria, scarlet fever, or typhoid fever.—Walter H. Morrill, Sec.

CRANBERRY ISLES. 1902. Two nuisances removed. There were during the month of June six cases of scarlet fever, one very severe, but no deaths. All precautions were taken preventing any further spread. We used the formalin disinfecting lamp and think it worked well in fumigating.

1903. One nuisance reported and removed. During this year there have been four sewers put in by private individuals. There has been no sickness of any kind to note. The town is in a very healthy condition at present.—George W. Bulger, Sec.

CRAWFORD. 1902. No infectious diseases.—J. P. Jeffery, Sec.

CRIEHAVEN PLANTATION. 1902. Nothing to report.—H. J. McClure, Sec.

1903. No cases of diphtheria, scarlet fever, or typhoid fever during the year.—E. W. Crie, Sec.

CRYSTAL. 1902. Five nuisances reported; three removed. Five cases of scarlet fever.

1903. Two nuisances removed. Two cases of scarlet fever. There have been no improvements during the past year.—A. A. Emerson, Sec.

CUMBERLAND. 1902. One nuisance removed. Two cases of diphtheria, but no other infectious diseases. The town pays for all the disinfection.

1903. One nuisance removed. Three cases of scarlet fever and two of typhoid. About 90% of the population are vaccinated.—Dr. H. M. Moulton, Sec.

CUTLER. Three cases of typhoid fever in 1903. The board has kept a strict watch of the sanitary condition of the town in general; but owing to our close proximity to the sea board, our town is in a very healthy condition, sloping as it does toward the sea and having excellent drainage.—F. S. Stevens, Sec.

CYR PLANTATION. 1903. Forty cases of smallpox.—Dedime Morin, Sec.

DALLAS PLANTATION. 1902. There was no sickness during the year so the board had no work to do.—Ella G. Adams, Sec.

1903. Twelve cases of smallpox, but no other infectious disease.—Frank Haley, Sec.

DAMARISCOTTA. Nothing to report except one case of diphtheria in 1902 and two nuisances removed in 1903. The bills for disinfection are sometimes paid in full by the householder and sometimes divided between the householder and the town.—A. H. Snow, Sec.

DANFORTH. No infectious diseases in either year. Seven nuisances removed in 1902 and three reported and removed in 1903. About 60% of the people are well protected by vaccination.—Dr. M. L. Porter, Sec.

DAYTON. No contagious diseases reported except one case of smallpox, one of scarlet fever, and two of typhoid fever in 1902, and one case of scarlet fever in 1903. No public or private improvements have been made during the past two years.—Dr. George Sylvester, Sec.

DEAD RIVER PLANTATION. No infectious diseases for two years.—B. F. Safford, Sec.

DEBLOIS. 1902. No contagious diseases.—Wm. B. Leighton, Sec.

1903. We have had no cases of any infectious diseases.—C. S. Leighton, Sec.

DEDHAM. 1903. No infectious diseases with the exception of four cases of smallpox. The work of disinfection is done at the expense of the town.—Chas. E. Johnson, Sec.

DEER ISLE. No contagious diseases in either year.—George W. Small, Sec.

DENMARK. 1902. One nuisance removed. One case of scarlet fever. There has been but very little work for the board of health for the past year. Dr. S. T. Brown, Sec.

1903. This town was pretty free from sickness the past year, no cases of infectious diseases having been reported.—A. W. Belcher, Sec. pro tem.

DENNISTOWN PLANTATION. 1902. One case of smallpox and one of typhoid fever.—Moses Holden, Third Member.

1903. No infectious diseases.—Newell E. Graffte, Sec.

DENNYSVILLE. No contagious diseases except one case of typhoid fever in each year.—Fred L. Gardner, Sec.



**DETROIT.** Nothing to report except two nuisances removed in each year and one case of scarlet fever in 1903.—Parker Sawyer, Sec.

**DEXTER.** 1903. Seven nuisances reported; all removed. Six cases of scarlet fever and two of typhoid. When the householder is able to pay for the disinfection, he is required to do so; otherwise the town pays the bills.—Dana Crockett, Sec.

**DIXFIELD.** 1902. Two cases of scarlet fever and one of typhoid. Several years ago free vaccination was offered and the whole town was thoroughly canvassed so that nearly all the people are protected by vaccination.

1903. One nuisance removed. Eight cases of scarlet fever and one of typhoid. In the work of disinfection, the town furnishes the formaldehyde and generator, and in many cases bears part of the expense.—Dr. James S. Sturtevant, Sec.

**DIXMONT.** No infectious diseases reported for either year except five cases of scarlet fever in 1902.—A. F. Tasker, Sec.

**DOVER.** 1903. Seven nuisances removed. One case of diphtheria, four of scarlet fever, and three of typhoid. The board has been active in getting a system of sewerage and has been quite successful.—G. G. Downing, Sec.

**DRESDEN.** 1902. Three cases of scarlet fever. The disinfection is done by the householder under the orders and supervision of the local board. During the past year, the local board have displayed more interest in the work required of them.—L. H. Dorr, M. D., Sec.

**DREW PLANTATION.** No infectious diseases in either year.—C. R. Andrews, Sec.

**DURHAM.** 1902. Two nuisances reported and removed. Fifteen cases of smallpox and one of diphtheria.

1903. One nuisance removed. Eleven cases of smallpox with two deaths. For the work of disinfection, the board furnishes formaldehyde and a disinfectant and instructs the householder how to use it. The work is done at the expense of the town.—S. B. Libby, Sec.

**DYER BROOK.** One nuisance removed in 1902. We have been highly favored in regard to contagious diseases and there has been no occasion for any expense except for vaccination which the town provided free for all and which was gladly

accepted. The greater part of the people were vaccinated with marked success.—L. S. Townsend, Sec.

E PLANTATION. 1902. One nuisance removed. No infectious diseases.—Roland King, Sec.

1903. Nothing to report.—J. R. Mills, Sec.

EAGLE LAKE PLANTATION. 1902. Three cases of diphtheria, but none of scarlet fever or typhoid.—Arthur W. Boyle, Sec.

1903. One case of smallpox and two of diphtheria were all the infectious diseases reported during the year.—J. A. Michaud, Sec.

EASTBROOK. 1903. No contagious diseases.—W. B. Clow, Chr.

EAST LIVERMORE. 1902. Two nuisances removed. One case of scarlet fever. There has been no special change in the work of the board. We advise cleanliness above everything else in schools and dwelling houses.—F. H. Boothby, Sec.

1903. Six nuisances removed. Eleven cases of smallpox and seven of typhoid fever. Disinfection is done by the board at the expense of the householder if he is able to pay; if not, at the town's expense.—Dr. L. B. Hayden, Sec.

EAST MACHIAS. 1902. Ten nuisances reported; all removed or properly adjusted. In the few cases when disinfection has been done, the attending physician has attended to the matter.

1903. Six nuisances removed. One case of smallpox and two of scarlet fever.—E. E. Wiswell, Chr.

EASTPORT. 1902. Twenty-five nuisances reported; all removed. One case of diphtheria, two of scarlet fever, and eighteen of typhoid. About 75% of the people in the city are protected by vaccination.

1903. Forty-seven nuisances removed. No infectious diseases except three cases of typhoid fever.—John A. Lowe, Sec.

EDDINGTON. One case of smallpox and fifteen of scarlet fever in 1903. In regard to the fifteen cases of scarlet fever would say that several families had contracted the disease in a mild form before we were notified. They had employed no physician and were unaware of its existence until our health officer visited them. The householder is not allowed to do the disinfection. We have a competent agent who thoroughly understands the latest methods of disinfection, and he works under the direction of our board.—George W. Estes, Sec.

EDEN. 1902. Ninety-eight nuisances removed. Four cases of diphtheria, eleven of scarlet fever, and one of typhoid. In all cases of diphtheria, we supply antitoxin at the expense of the town. During the vacation we fumigated all the school-houses and books in the village.

1903. One hundred and two nuisances reported and removed. One case of smallpox and three of typhoid fever. We have this year bought a lot and building of eight rooms fairly well fitted up for a pest house. It is about two miles from the village.—Osmond Emery, Sec.

EDGECOMB. Two nuisances removed in 1902; also five cases of diphtheria, four of scarlet fever, and one of typhoid fever in the same year. These cases of diphtheria and scarlet fever have been well looked after and all necessary precautions taken. The houses were quarantined and placarded and the diseases were confined to the houses where they broke out. No deaths occurred in any of the cases. We have also had several cases of tonsilitis and other throat troubles through the year, and one or more cases of pneumonia.—Frank M. Dodge, Sec.

EDINBURG. One nuisance removed in 1902. No infectious diseases except six cases of scarlet fever in 1902 and ten cases of smallpox in 1903.—C. W. Eldredge, Sec.

EDMUNDS. 1902. One case of typhoid fever.—R. H. Hallowell, Sec.

1903. No contagious diseases during the year.—Wm. F. Bell, Chr.

ELIOT. 1902. One nuisance removed. Ten cases of scarlet fever and seven of typhoid fever. About 70% of the people in this town are well protected by vaccination.

1903. Nothing to report only four or five cases of scarlet fever. Free vaccination was offered during the entire year of 1903.—Dr. H. I. Durgin, Sec.

ELLIOTTSVILLE PLANTATION. Two nuisances removed in 1902. No contagious diseases during either year.—H. W. Lane, Sec.

EMBDEN. 1903. Six cases of scarlet fever.—F. B. Young, Sec.

ENFIELD. 1903. Two nuisances removed. Three cases of scarlet fever and one of typhoid. We see the result of our work in having all cess pools and other places put in a sanitary condi-

tion. When the water gets low and bad for domestic use, we go to the lakes and springs for it in no case allowing anyone to take water from the river.—A. J. Darling, Sec.

ETNA. No infectious diseases. A house to house vaccination trip was made by the secretary of the board and a physician in 1903, and a large number of those who had not been vaccinated recently were vaccinated at that time.—S. J. Locke, Sec.

EXETER. Nothing to report except nine cases of scarlet fever and two of typhoid in 1902 and four of scarlet fever in 1903.—Dr. S. J. Redman, Sec.

FAIRFIELD. 1902. Twenty nuisances reported; all except one removed. Four cases of diphtheria, two of scarlet fever, and fifteen of typhoid. As a whole our streets are kept in a good sanitary condition and the dwellings are as good as can be where there is no system of sewerage.

1903. Twenty-nine nuisances reported; twenty-eight removed. Seven cases of smallpox and five of diphtheria. We have built a sewer on Summit Street and are going to build more this season. George C. Eaton, Sec.

FALMOUTH. 1902. Two cases of diphtheria and three of typhoid fever. The disinfection is done at the expense of the town.

1903. Two nuisances removed. Four cases of diphtheria and one of typhoid fever. About 90% of the people are well protected by vaccination.—Daniel W. Lunt, Sec.

FARMINGDALE. 1902. One nuisance removed. No infectious diseases.

1903. One nuisance reported and removed. Two cases of scarlet fever and one of typhoid.—F. M. Putnam, M. D., Sec.

FARMINGTON. 1902. Three nuisances reported; all removed. Four cases of diphtheria and one of scarlet fever. There has been improvements in the sewerage and the water supply in many cases. In doing disinfection, the householder pays for the material and the town does the work.—F. O. Lyford, M. D., Sec.

1903. Two cases of smallpox and four of diphtheria.—S. R. Knowlton, Sec.

FAYETTE. 1902. No contagious or infectious diseases.—O. L. Basford, Sec.



FLAGSTAFF PLANTATION. There were two nuisances removed in 1903. One case of typhoid fever in 1902 and three cases of the same disease in 1903.—Ansel A. Eames, Sec.

FOREST CITY. Nothing to report except six cases of scarlet fever in 1902.—Frank W. Bartlett, Sec.

FORT FAIRFIELD. 1902. Two nuisances removed. Three cases of diphtheria, five of scarlet fever, and one of typhoid.—Dr. R. H. Perkins, Sec.

FORT KENT. 1902. Three nuisances reported; two removed. Four cases of typhoid fever were all the cases of infectious disease during the year. The local board has done all in its power to prevent contagious diseases and especially smallpox from entering our town and have been successful so far. The selectmen and citizens have given us all their aid and sympathy.—Dr. F. G. Sirois, Sec.

FOXCROFT. 1902. Three nuisances removed. Two cases of typhoid fever. The sewerage is not very good here, and it is pretty hard work to keep contagious diseases from coming into the town. We have a good water system here. We use formaldehyde in disinfection with good results.

1903. Three nuisances reported, two of which were removed. One case of smallpox, two of diphtheria, one of scarlet fever, and two of typhoid. There were also four cases of measles reported. In the cases of diphtheria, antitoxin was used with good results. Over five hundred people have been successfully vaccinated within a short time.—G. W. Ham, Sec.

FRANKFORT. 1902. One nuisance removed. One case of typhoid fever.—F. L. Tyler, Sec.

FRANKLIN. 1903. No cases of contagious disease reported.—George U. Dyer, Sec.

FREEDOM. 1903. Nothing to report.—Frank H. Thurston, Sec.

FREEMAN. 1903. Three cases of scarlet fever, but none of diphtheria or typhoid fever.—S. F. Brackley, Sec.

FREEPORT. Six nuisances removed in 1903. One case of smallpox and three of typhoid fever in 1902; and one of diphtheria and twenty of scarlet fever in 1903. About three-fourths of the town are well protected by vaccination.—N. D. Hyde, M. D., Sec.

FRENCHVILLE. Nothing to report except one nuisance removed in 1902, and thirty cases of smallpox and two of diphtheria in 1903.—Isidore Côté, M. D., Sec.

FRIENDSHIP. 1902. One case of scarlet fever and five of typhoid. Our town has been free from contagious diseases till the past year. The five cases of typhoid came under my care, but I was unable to trace the source of infection.

1903. Two cases of typhoid fever. If the householder is unable to pay for the disinfection, the work is done by the board of health and the town pays the bills. Have made no special changes or improvements. We are on the alert for cases of contagious diseases and when we come in contact with any, we act promptly; and if we are liable to err, we endeavor to make our mistakes on the side of public safety. We had one case of pulmonary tuberculosis which was undoubtedly transmitted from one member of a family to another. A young man spent the summer in a family here and left in the fall for Dakota, and this fall I attended the hostess, a cousin of the young man by marriage, and a bacteriological examination of the sputa showed the bacilli in small number. No previous cases in her family and the husband in perfect physical condition.—Chas. J. Watson, M. D., Sec.

FRYEBURG. 1902. One nuisance removed. One case of diphtheria, but no other infectious disease reported. About 80% of the population here are protected by vaccination.—A. C. Ferguson, M. D., Sec.

1903. There were no contagious diseases in town during 1903.—Dr. Arthur J. Lougee, Sec.

GARDINER. 1902.—Eight nuisances reported; six removed. One case of smallpox, five of diphtheria, and six of typhoid fever. All disinfection is done at the expense of the city.

1903. Eight nuisances reported, six of which were removed. Eight cases of diphtheria, twenty-five of scarlet fever, and five of typhoid.—F. E. Strout, M. D., Sec.

GARFIELD PLANTATION. No contagious diseases in either year.—L. K. Tilley, Sec.

GARLAND. No infectious diseases with the exception of one case of typhoid fever in 1903. The disinfection is done by the health officer or under his supervision.—Dr. W. R. L. Hathaway, Sec.

GEORGETOWN. The board had no work to do during two years except the removal of two nuisances in 1903.—W. H. Dearborn, Sec.

GILEAD. One nuisance was removed in each year. One case of diphtheria in 1902.—A. T. Heath, Sec.

GLENBURN. No infectious diseases reported except two cases of smallpox and one of typhoid fever in 1903. The town has been fortunate in regard to sickness. As the years go by the people as a general thing pay more regard to their sanitary surroundings, door yards are kept cleaned up and more attention is given to cleaning out the wells.—John F. Tolman, Sec.

GLENWOOD PLANTATION. 1902. We have had no cases of contagious disease.—James F. Read, Sec.

1903. As Glenwood is only a plantation with very few inhabitants, the local board of health is not much more than a form. We have had no occasion to do any work during the past year.—M. E. Grant, Sec.

GORHAM. 1902. Two nuisances removed. Two cases of diphtheria and one of scarlet fever.

1903. Six nuisances reported; all removed. Two cases of diphtheria and three of typhoid fever. About 75% of the town are well vaccinated.—G. W. Heath, Sec.

GOULDSBORO. No contagious diseases for two years.—A. S. Rolfe, Sec.

GRAFTON. I am very glad to say that we have had no infectious diseases in the past two years.—Z. W. Chapman, Sec.

GRAND FALLS PLANTATION. 1902. No cases of infectious disease during the two years.—P. B. Moore, Sec.

GRAND ISLE. Nothing reported.—Florent Sanfacon, Sec.

GRAND LAKE STREAM PLANTATION. No cases of infectious or contagious disease have been reported for two years.—W. B. Hoar, Sec.

GRAY. 1902. No nuisances reported. No infectious diseases except one case of typhoid fever.

1903. Eleven cases of diphtheria, five of scarlet fever, and three of typhoid fever. After cases of infectious disease, the house is disinfected by the board of health and the clothing, etc., by the householder.—L. T. Cushing, Sec.

GREENBUSH. 1902. One case of typhoid fever. Free vaccination was offered in the town and a physician went through

the town calling at every house and vaccinating all who were willing to be vaccinated.—Albion Harriman, Sec.

1903. Two cases of smallpox, but none of diphtheria, scarlet fever, or typhoid.—G. A. French, Sec.

GREENE. 1902. Two nuisances removed. One case of typhoid fever. All disinfection done by the local board of health is paid for by the town.—O. E. Hanscom, M. D., H. O.

1903. Two nuisances reported and removed. One case of smallpox.—E. L. Mower, Sec.

GREENFIELD. One case of typhoid fever in 1903. We have very pure water in our town and no lack of good fresh air, so it keeps us clear of contagious diseases.—B. C. White, Sec.

GREENVALE. 1902. There were no infectious diseases in town during the year and no work for the board of health.—Frank A. Hight, Sec.

GREENVILLE. 1903. One nuisance removed. Fourteen cases of smallpox, one of scarlet fever and three of typhoid.—F. H. Carleton, Sec.

GREENWOOD. No contagious diseases during two years except three cases of scarlet fever in 1902, and two cases of scarlet fever and one of typhoid in 1903. The work of disinfection is sometimes done at the expense of the town and sometimes by the householder, if able.—A. C. Libby, Sec.

GUILFORD. 1902. Three nuisances reported; all removed. Two cases of smallpox and two of typhoid fever. In the cases of smallpox, the town paid for the disinfection; but in other cases, the householder pays.

1903. One nuisance removed. One case of smallpox and two of typhoid fever.—Dr. R. H. Marsh, Sec.

HALLOWELL. 1902. Three nuisances removed. Nineteen cases of smallpox and six of typhoid fever.

1903. Three nuisances removed. One case of diphtheria, four of scarlet fever, and six of typhoid fever. About 75% of the people in this city are well protected by vaccination.—E. M. Henderson, Sec.

HAMLIN PLANTATION. 1902. Two cases of diphtheria, but no other contagious diseases reported.—Thomas Keegan, Sec.

HAMMOND PLANTATION. 1902. Nothing to report.—John W. Davidson, Sec.



HAMPDEN. 1902. One nuisance removed. One case of smallpox and one of typhoid fever.—Dr. W. H. Nason, Sec.

1903. One nuisance reported and removed. Eleven cases of smallpox. The town has been very free from contagious diseases the past year with the exception of smallpox. The cases, however, were very light. The town has since been quite thoroughly vaccinated and at present the general health is good.—Dr. C. F. Cowan, Sec.

HANCOCK. No infectious diseases reported in either year with the exception of one case of typhoid fever in 1902.—J. E. Bouclen, Sec.

HANOVER. We have tried to keep everything in as good order as possible and have urged it upon the people to be very careful; and outside of one case of diphtheria in 1902, we have not had any trouble.—H. E. Dyer, Sec.

HARMONY. Nothing reported for two years except five cases of smallpox and one of diphtheria in 1903.—Dr. Wm. McLaughlin, Sec.

HARPSWELL. No contagious diseases for two years except one case of diphtheria in 1902 and one of typhoid fever in 1903. During the month of March, 1902, the local board offered free vaccination. Two doctors canvassed the town, and in most instances, were gladly received.—Harmon O. Coombs, Sec.

HARRINGTON. One nuisance was removed in 1902. Also two cases of diphtheria in that same year, and one of typhoid fever in 1903.—E. R. McKenzie, Sec.

HARRISON. 1902. One nuisance was reported and disposed of after some trouble by the board. We seem to be very free from infectious diseases of all kinds. We have had only two very mild cases of typhoid fever this year, and we cannot help feeling that the prompt action of the board in the past has been productive of the best results. There were also several cases of whooping-cough last winter followed by one case of scarlet fever in the spring.

1903. One nuisance removed. No contagious diseases except three cases of typhoid fever.—E. A. Wight, M. D., Sec.

HARTFORD. Nothing to report with the exception of three cases of scarlet fever in 1902.—T. B. W. Stetson, Sec.

HARTLAND. 1902. Six nuisances reported; five removed. One case of scarlet fever and two of typhoid.

1903. Five nuisances removed. Two cases of smallpox and five of diphtheria.—E. K. Fuller, Sec.

HAYNESVILLE. No cases of infectious disease reported during two years except twelve cases of scarlet fever and one of typhoid.—James F. Bryson, Sec.

HEBRON. 1902. Eighteen mild cases of scarlet fever. Nearly all except the small children in town have been vaccinated.—L. L. Phillips, Sec.

1903. One nuisance removed. No contagious diseases. Formaldehyde is used for disinfection when necessary.—Sylvanus Bearce, Sec.

HERMON. No infectious diseases except two cases of typhoid fever in 1902, and one of smallpox and scarlet fever in 1903.—Dr. F. P. Whitaker, Sec.

HERSEY. One nuisance removed in 1902. Nothing else to report for two years except one case of typhoid and four of scarlet fever in 1903.—Lowell M. Davis, Sec.

HIGHLAND PLANTATION. Nothing reported for two years except five cases of scarlet fever in 1903.—L. C. Parsons, Sec.

HIRAM. Twenty cases of scarlet fever in 1902. We have but little to do. The town has been very fortunate in the absence of contagious diseases of the worst classes. We have had for some weeks the mumps in a school district on a cross road. I believe it has not spread to any other district. I propose to call public attention to the offer of free vaccination in a few days. During the school vacation, it could be attended to with no serious inconvenience. Of course, we are liable to exposure, being on the Maine Central R. R. and its junction with the Bridgton & Saco River R. R. We also have a new steam mill employing some fifty lumbermen in and around it.—L. A. Wadsworth, Sec.

HODGDON. One nuisance removed in 1903; also one case of typhoid fever in the same year. Our town is a healthy one and we haven't much to do.—Moses Benn, Sec.

HOLDEN. 1902. One nuisance removed. Two cases of typhoid fever.—G. W. Clark, Sec.

HOLLIS. 1902. Two nuisances reported and removed. One case of smallpox, fourteen of diphtheria, one of scarlet fever, and two of typhoid. Disinfection is done at the expense of the town.

1903. One nuisance removed. One case of diphtheria and one of scarlet fever.—I. S. McDaniel, Sec.

HOPE. 1902. One case of diphtheria was the only case of infectious disease during the year.—George F. Taylor, Sec.

1903. Three cases of diphtheria.—A. S. Lermond, Sec.

HOULTON. 1902. Six nuisances removed. Three cases of smallpox, fifteen of diphtheria, sixteen of scarlet fever, and nine of typhoid.

1903. Five nuisances reported; all removed. One case of smallpox, two of diphtheria, and three of typhoid fever.—T. S. Dickison, M. D., Sec.

HOWLAND. Nothing reported with the exception of one case of typhoid fever in 1902.—R. Q. Lancaster, Sec.

HUDSON. 1902. One case of typhoid fever.—John B. Southard, Sec.

1903. No infectious diseases except one case of typhoid fever.—G. H. Smith, Chr.

HURRICANE ISLE. 1903. One nuisance removed. No contagious disease.—L. W. Vinal, Sec.

INDUSTRY. No infectious diseases except one case of scarlet fever in 1903.—A. J. Spinney, Sec.

ISLAND FALLS. 1902. Two nuisances removed. There have been no changes or improvements.

1903. One case of smallpox, twenty-one of diphtheria, and four of typhoid fever.—W. S. Leavitt, Sec.

ISLES AU HAUT. 1902. One nuisance removed. No infectious diseases.—George C. Hopkins, Sec.

ISLESBORO. 1902. Two nuisances removed. Seven cases of scarlet fever and seven of typhoid.

1903. Two nuisances reported; both removed. Two cases of typhoid fever.—J. A. Sprague, Sec.

JACKMAN. 1902. Eighteen cases of smallpox, three of scarlet fever, and two of typhoid. Every person in this town is well protected by vaccination.—Estes Nichols, M. D., H. O.

JACKSON. No contagious diseases reported except one case of diphtheria in 1903. About 70% of the people are well protected by vaccination.—R. E. Page, Sec.

JAY. 1902. No nuisances removed. One case of diphtheria, two of scarlet fever, and five of typhoid.

1903. Eighteen cases of smallpox, four of scarlet fever, and one of typhoid.—S. B. Farnum, Sec.

JEFFERSON. 1902. One nuisance removed. No contagious diseases with the exception of one case of scarlet fever and one of typhoid.

1903. Two nuisances reported; both removed. Two cases of typhoid fever. The work of disinfection is done by the householder under the supervision of the board of health.—C. W. Besse, Sec.

JONESBORO. One case of scarlet fever in 1902 and several cases of whooping-cough in 1903 were the only contagious diseases during the two years.—D. C. Marston, Sec.

JONESPORT. One nuisance removed in 1903. Four cases of typhoid fever in 1902, but no other infectious diseases during the two years. We sometimes allow the householder to disinfect his own place after cases of measles, but the board of health disinfects after any other infectious disease.—Dr. F. B. Adams, Sec.

KENDUSKEAG. 1902. One nuisance removed. One case of scarlet fever and two of typhoid. I have seen the spread of tuberculosis in one family by infection. The oldest child had the disease, but through the carelessness of the physician, it was allowed to spread and two other children were stricken down. The last case was carefully cared for, all sputum being burned and separate dishes used and disinfected at once. The other children have been in good health.

1903. Two nuisances removed. Two cases of typhoid fever. Formaldehyde is used for disinfection.—Dr. W. S. Purinton, Sec.

KENNEBUNK. 1902. Twelve nuisances reported; all removed. Four cases of smallpox.—Frank M. Ross, M. D., Sec.

1903. Two cases of diphtheria and two of typhoid fever. About 75% of the population are well protected by vaccination.—J. S. Barker, Sec.

KENNEBUNKPORT. 1902. Eleven nuisances reported and removed. Twelve cases of diphtheria and one of typhoid.

1903. Six nuisances removed. No contagious diseases except two cases of typhoid fever.—William H. Cluff, Sec.

KINGFIELD. 1902. Two nuisances removed. Fifteen cases of scarlet fever. There have been public sewers placed on three of the principal streets and that takes a large percentage of the



drainage of the town. The health officer has personally superintended the disinfection of the houses where scarlet fever has occurred charging the town only for the formaldehyde used.—R. D. Simons, M. D., Sec.

1903. Ten cases of scarlet fever and two of typhoid. The work of disinfection is done at the expense of the town.—E. L. Pennell, M. D., Sec.

KINGMAN. 1903. Six nuisances reported; five removed. Three cases of typhoid fever.—C. S. Griffin, Sec.

KINGSBURY PLANTATION. 1903. There have been no cases of contagious disease in town for the past year.—Guy L. Cameron, Sec.

KITTERY. 1902. Five nuisances removed. One case of smallpox, one of diphtheria, three of scarlet fever, and three of typhoid.

1903. Ten nuisances reported; all removed. Two cases of smallpox, four of scarlet fever, and two of typhoid. About two-thirds of the people have been vaccinated recently.—Dr. E. E. Shapleigh, Sec.

KNOX.—1902. Nothing to report.—E. L. Thompson, Sec.

1903. No infectious diseases.—E. R. Wentworth, Sec.

LAGRANGE. 1902. This town has had no cases of infectious diseases of any kind the past year. There have been no nuisances reported and no work of that kind for the board to do.—L. W. Bishop, Sec.

1903. Two cases of typhoid fever.—James L. Frost, Sec.

LAKEVIEW PLANTATION. 1903. One nuisance removed. No contagious diseases reported.—Ai Clapp, Jr., Sec.

LAKEVILLE PLANTATION. 1902. No contagious or infectious diseases.—James Ham, Sec.

1903. Nothing reported to the board.—Rachel King, Sec.

LAMOINE. We have been very free from contagious diseases during the past two years.—John F. Lear, Sec.

LANG PLANTATION. 1902. Nothing to report.—Rufus O. Dyer, Sec.

LEBANON. 1902. One case of scarlet fever and one of typhoid. Our disinfection is done at the expense of the town.—G. R. Cate, M. D., Sec.

1903. One case of scarlet fever, but none of diphtheria or typhoid fever.—R. D. Roberts, Sec.

LEE. No contagious diseases during either year.—H. L. Haskell, Sec.

LEEDS. Two nuisances removed in 1902 and one in 1903. No contagious diseases with the exception of one case of typhoid fever in 1902.—E. A. Mills, Sec.

LEVANT. 1902. One case of typhoid fever.—Frank White, Sec.

1903. No infectious diseases except one case of smallpox, so there has not been much work for the board to attend to.—C. F. Wilson, Sec.

LEWISTON. 1902. Thirty-seven nuisances reported; thirty-three removed. Four cases of smallpox, four of diphtheria, and three of scarlet fever.—H. S. Sleeper, M. D., Sec.

1903. Thirty-four nuisances reported and twenty-nine removed. Sixty-five cases of smallpox, eighteen of diphtheria, twenty-nine of scarlet fever and one of typhoid fever. We have compelled a number of property owners in the thickly settled sections to connect with the sewer. A number of vacant lots have been cleared. The rules of the board of health in regard to sanitary plumbing have been strictly enforced, but in spite of the careful supervision of the inspector of plumbing, some plumbers have failed to do as they ought.—E. A. Crockett, M. D., Sec.

LEXINGTON PLANTATION. 1902. Nothing of interest to report.—A. J. Lane, Sec.

1903. No infectious diseases except one case of scarlet fever.—H. P. Norton, Sec.

LIBERTY. No infectious diseases except one case of typhoid fever in 1902 and four of scarlet fever in 1903.—Dr. Chas. B. Hoit, Sec.

LIMESTONE. Two nuisances reported and removed in 1902. Two cases of typhoid in 1902 and two in 1903.—A. D. Hatfield, Sec.

LIMINGTON. 1903. Two cases of diphtheria and three of typhoid fever. About 90% of the people in this town are protected by vaccination.—J. F. Moulton, M. D., Sec.

LINCOLN. No cases of contagious disease during the two years.—A. Weatherbee, Sec.

LINCOLN PLANTATION. 1902. There was no sickness during the summer of 1902 except one case of cholera infantum.

In November an epidemic of grippe visited the place causing the school to be closed. The grippe developed into pneumonia in eight cases and there were two deaths. The doctors gave it as their opinion that the epidemic was caused by holding the water in the river above here so high that it overflowed into the swamps, causing stagnant water.—Royal S. Bean, Sec.

LINCOLNVILLE. 1902. Three nuisances removed. Two cases of diphtheria and one of scarlet fever.—E. F. Brown, M. D., Sec.

1903. One case of smallpox, but none of diphtheria, scarlet fever, or typhoid.—Chas. H. Leach, M. D., Sec.

LINNEUS. No infectious diseases except one case of typhoid fever in 1903.—Robert Boyd, M. D., Sec.

LISBON. 1902. Ten nuisances removed. Nine cases of typhoid fever in five families.

1903. Six cases of smallpox, eight of diphtheria, eight of scarlet fever, and fourteen of typhoid fever. About 60% of the town are well vaccinated.—F. A. Jordan, Sec.

LITCHFIELD. One nuisance removed during each year. No infectious diseases with the exception of nine cases of scarlet fever.—Gardiner Roberts, Sec.

LITTLETON. 1902. Nothing reported to the board.—George Crosby, Sec.

LIVERMORE. One case of scarlet fever and a few cases of measles in 1902. Two cases of smallpox in a family of five and one case of scarlet fever in 1903. Schoolhouses are looked after very carefully and thoroughly fumigated after a case of infectious disease appears in them.—F. H. Boothby, Sec.

LONG ISLAND PLANTATION. No contagious diseases in either year.—William S. Rich, Sec.

LOVELL. Nothing to report.—C. P. Hubbard, M. D., Sec.

LOWELL. No infectious diseases except two cases of scarlet fever in 1902. I have known of two families in which every member died of tuberculosis.—J. R. Shorey, Sec.

LUBEC. One case of diphtheria in 1903 was all the infectious disease during two years.—F. W. Fanning, Sec.

LUDLOW. 1902. No contagious diseases. We have not made any changes since last year.—David Small, Sec.

1903. One case of typhoid fever.—B. E. Hovey, Sec.

LYMAN. 1902. Three cases of diphtheria and two of chickenpox. The disinfection is done at the expense of the town.—F. E. Tripp, Sec.

1903. One case of smallpox and one of typhoid fever reported.—E. N. Littlefield, Sec.

MACHIAS. One nuisance removed in 1902. One case of smallpox and six of typhoid fever in 1902, and ten cases of typhoid in 1903. I have seen dozens of cases where tuberculosis was spread by infection in families.—A. L. Smith, M. D., Sec.

MACHIASPORT. 1903. One case of typhoid fever. The householder pays for the disinfection when able.—S. N. Tobey, Sec.

MACWAHOC PLANTATION. 1902. No contagious diseases.—F. E. Libbey, Sec.

1903. Nothing to report.—R. H. Martin, Sec.

MADAWASKA. One nuisance removed in 1903. No infectious diseases with the exception of twenty cases of smallpox in 1903.—Leonard Dufour, Sec.

MADISON. 1902. Two nuisances reported; one removed. Three cases of scarlet fever and one of typhoid.

1903. Three nuisances reported; nearly all removed. Six cases of smallpox, five of diphtheria, four of scarlet fever, and one of typhoid fever.—D. L. Churchill, Sec.

MADRID. There has been no work to do except one case of typhoid fever in 1903 and a few cases of measles in 1902 which have been well cared for by the board of health.—S. J. Sargent, Sec.

MANCHESTER. No contagious diseases reported except seven cases of scarlet fever and three of typhoid in 1903. The householder does his own disinfecting under the direction of the local board.—G. M. Knowles, Sec.

MAPLETON. 1902. Three cases of smallpox, three of scarlet fever, and four of typhoid.—L. W. Hughes, Sec.

1903. One case of typhoid fever, but none of smallpox, diphtheria, or scarlet fever. Free vaccination was offered last winter and many availed themselves of the opportunity thus offered.—E. A. Smith, Sec.

MARION. 1903. No contagious diseases.—B. L. Smith, Sec.

MARSHFIELD. No infectious or contagious diseases reported during two years.—E. L. Hanscom, Sec.



**MARS HILL.** Four cases of scarlet fever in 1902 and four of typhoid fever in 1903. The town has started a sewer to be completed this year. Our board have worked together and have investigated any case or demand, and have notified parties to do proper work in the way of cleaning and removing filth from about their premises. The general health of our people has been good.—B. F. Pierce, Sec.

**MASARDIS.** Four cases of diphtheria and two of typhoid fever in 1902, and two cases of smallpox in 1903. In the cases of smallpox, we gave strict and constant attention and had all places properly disinfected by the health officer. He met with some opposition and dissatisfaction on the part of some of the householders as I suppose is generally the case; but we pay no attention to that, but go ahead and do our duty and look after proper sanitation generally.—Fred W. E. Goss, Sec.

**MASON.** 1902. No infectious diseases.—Ervin Hutchinson, Chr.

**MATINICUS ISLE PLANTATION.** There has not been any contagious diseases here for years so there has not been any disinfection to be done.—E. A. Young, Sec.

**MATTAMISCONTIS.** 1902. Nothing to report.—Harry C. Roberts, Sec.

**MATTAWAMKEAG.** 1902. We have had no contagious diseases in town and have been very lucky so far.—Wilbur Wyman, Sec.

**MAXFIELD.** 1902. This is a small town and but little sickness of any kind has been known the past year, although there have been a few cases of whooping-cough.—James Wiley, Sec.

**MAYFIELD PLANTATION.** One nuisance removed in each year. No contagious diseases. When cases are reported, we attend to them at once, and see that the disinfection is properly done at the expense of the householder.—S. A. Chamberlain, Sec.

**MECHANIC FALLS.** 1902. Seven nuisances reported and removed. Ten cases of scarlet fever and six of typhoid. I should say that 95% of the people in this town are well protected by vaccination.

1903. Two nuisances reported; one removed. Fourteen cases of scarlet fever and one of typhoid.—M. N. Royal, Sec.

**MEDDYBEMPS.** No infectious diseases reported in either year.—John S. Bridges, Sec.

MEDFORD. No contagious diseases except one case of scarlet fever in 1903. In this case, such care was exercised by the board and householder that children living in the same house did not contract the disease.—E. G. Lovejoy, Sec.

MEDWAY. One case of smallpox and one of typhoid fever in 1903.—C. F. Moore, Sec.

MERCER. One case of typhoid fever in 1902, but none of diphtheria, scarlet fever or typhoid in 1903. We have made more stringent rules in regard to the public exposing themselves to contagious diseases.—I. C. Tracy, Sec.

MERRILL PLANTATION. No infectious diseases for two years.—Dr. A. B. Libby, Sec.

MEXICO. 1903. Three nuisances removed. One case of diphtheria, one of scarlet fever, and five of typhoid fever.—George R. Wills, Sec.

MILBRIDGE. 1903. Nothing reported to the board.—Dr. J. A. Walling, Sec.

MILFORD. 1902. Four nuisances reported and removed. Two cases of scarlet fever and two of typhoid. There have been no improvements and no changes in the methods of work. The town needs a sewerage system.—J. E. Canney, Sec.

1903. One nuisance removed. Seven cases of smallpox. I think the board are giving the work more attention and are less afraid of doing their duty.—M. W. Sawyer, Sec.

MILLINOCKET. 1902. Twenty nuisances reported; all have been removed. One case of diphtheria and three of typhoid fever. Improvements have been made by carting away debris, but a crematory for destruction of garbage would render the work of our board more efficient. Our sewerage has been extended and all cess-pools or receptacles which have been adjudged a nuisance or a source of danger to the public health have been discontinued as far as possible and connected with said sewers. When such nuisances exist in streets not provided with proper sewers, care is taken to abate the same as far as possible. The sanitary conditions of this new town, the "Magic City," is as near perfect as can possibly exist, as the people with few exceptions are in sympathy with the members of the board of health and are themselves desirous to assist in furthering the interests of said town.—P. W. Cody, M. D., Sec.

1903. Nine nuisances reported; all removed. Twenty cases of smallpox and eleven of typhoid fever. The town has erected for purposes of isolation and care of infectious patients a two-story frame house which when wholly completed will contain six rooms. This has not yet been plastered and finished inside, but it has already been of much service in the smallpox cases.—Chas. S. Bryant, M. D., Sec.

MILTON PLANTATION. 1902. Six cases of scarlet fever.—C. E. Jackson, Sec.

1903. No contagious diseases.—Lewis W. Farnum, Sec.

MINOT. Six cases of scarlet fever and two of typhoid in 1902; also twelve cases of scarlet fever and two of typhoid in 1903. A large majority of the people are well protected by vaccination.—W. E. Leland, Sec.

MONHEGAN PLANTATION. No contagious diseases during either year.—Reuben Davis, Sec.

MONMOUTH. No contagious diseases except five cases of scarlet fever and two of typhoid in 1902. Our town being rural is quite healthy most of the time, and none of the cases proved fatal.—John B. Fogg, Sec.

MONROE. 1903. One nuisance removed. One case of scarlet fever.—F. A. Nye, Sec.

MONSON. No contagious diseases reported. We fumigate all houses in which there have been cases of tuberculosis.—D. J. Jackson, Sec.

MOOSE RIVER PLANTATION. 1902. Seven cases of smallpox. We use formaldehyde for disinfection.—M. E. Holden, Sec.

1903. Two cases of smallpox.—J. H. Colby, Sec.

MORO PLANTATION. No cases of infectious disease for two years.—S. T. Bates, Sec.

MORRILL. 1902. Nothing to report.—Ivory D. White, Sec.

1903. One case of typhoid.—Robie Mears, Sec.

MOSCOW. No contagious diseases reported for two years.—B. F. Smith, Sec.

MOUNT CHASE. We have not been troubled with any contagious diseases for some time so our board has had but little to do.—J. A. McDonald, Sec.

MOUNT DESERT. 1902. Five nuisances removed. No cases of infectious diseases except four of diphtheria. There will be several additions to the public sewers made in different parts of

the town this year. The town throughout is in good sanitary condition and our board intend to keep it so by being prompt to remove any condition which might tend to make any place unhealthy.

1903. Four nuisances removed. Six cases of scarlet fever. About 75% of the town are protected by vaccination.—J. C. Hill, Sec.

MOUNT VERNON. One case of smallpox in 1902 and two of diphtheria in 1903. We have been extremely fortunate in our town this year and last, having only two cases of diphtheria, no scarlet fever, or typhoid and no spread from the one case of smallpox. We did expect that some members of the family would have the disease, but we think that having them vaccinated at once saved them from it.—A. P. Cram, Sec.

NAPLES. Our board has been inactive for the past two years. No contagion to contend with and no nuisances reported.—A. P. Reed, M. D., Sec.

NASHVILLE PLANTATION. Nothing reported during the two years.—Andrew Henry, Sec.

NEWBURG. 1902. We have had no work for the past year.—E. C. Newcomb, M. D., Sec.

NEW CANADA PLANTATION. No infectious diseases for two years except five cases of smallpox in 1902.—Thomas Daigle, Sec.

NEWCASTLE. Nothing reported with the exception of two cases of diphtheria and four of typhoid fever in 1902.—D. S. Glidden, Sec.

NEWFIELD. No contagious diseases in either year.—L. L. Piper, Sec.

NEW GLOUCESTER. 1902. Three cases of diphtheria, three of scarlet fever, and one of typhoid.

1903. Five cases of diphtheria and five of scarlet fever.—Wm. L. Shurtleff, Sec.

NEWPORT. 1902. Eight nuisances reported; all removed. No infectious diseases. The Water street sewer was extended about six hundred feet to a point opposite the school building. Several houses on the Main street sewer connected this year. As a whole, Newport is a cleanly village, well drained, and makes improvements each year.



1903. Eight nuisances removed. We have one of the best water systems in the State. The water is taken from a pure spring lake and enters nearly every building in the village, and is proving a great safeguard for the health of the people. Our board of health ordered free vaccination on account of smallpox being so prevalent in this vicinity. About two-thirds of the people were vaccinated, and many others had been vaccinated previously. We did not have any contagious diseases during the year.—Frank M. Shaw, Sec.

NEW PORTLAND. Two nuisances removed in 1902. No infectious diseases except one case of typhoid fever in 1903.—E. Hutchins, Sec.

NEWRY. 1902. One nuisance removed. No contagious diseases.—T. A. Eames, Sec.

1903. Two cases of smallpox. The work of disinfection is done at the expense of the householder.—H. E. Harlowe, Sec. pro tem.

NEW SHARON. 1903. One case of diphtheria; also one of German measles.

NEW SWEDEN. No infectious diseases in either year except one case of smallpox and three of diphtheria in 1903.—N. E. Ringdahl, Sec.

NEW VINEYARD. 1902. There haven't been any contagious diseases in town for the past year.—E. J. Voter, Sec.

1903. One case of scarlet fever.—W. S. Morrow, Sec.

NOBLEBORO. Nothing reported in either year except three cases of typhoid fever.—A. S. Winchenbaugh, Sec.

NORRIDGEWOCK. 1902. One case of typhoid fever. The board has urged vaccination this winter, and have forbidden the dumping of rubbish along the banks of the stream near the village.

1903. Six cases of smallpox, one of diphtheria, and two of typhoid fever.—Frank C. Holt, Sec.

NORTH BERWICK. No contagious diseases except one case of typhoid fever.—Haven A. Butler, Sec.

NORTHFIELD. Nothing to report for two years.—V. M. Smith, Sec.

NORTH HAVEN. The board had no work for two years except the removal of two nuisances in 1903.—J. B. Crockett, Sec.

NORTHPORT. Five cases of scarlet fever in 1902. As the sanitary conditions of the town are very good, the board has very little work to do.—F. A. Rhodes, Sec.

NORTH YARMOUTH. No infectious diseases for two years with the exception of twenty-eight cases of diphtheria in 1902.—E. D. Loring, Sec.

NORWAY. 1902. Twelve nuisances removed. One case of diphtheria, twenty-one of scarlet fever, and four of typhoid fever. There has been an improvement by the public in looking after their premises and keeping them clean.

1903. Sixteen nuisances reported; fifteen removed. Fifteen cases of scarlet fever and two of typhoid. The sanitary condition of the town has been greatly improved. When complaints have been made to the board, the owners have been very kind to see that said nuisances are removed at once.—S. A. Bennett, M. D., Sec.

NO. 8 PLANTATION. No sickness of any kind during either year.—Howard C. Fletcher, Clerk.

1903. There have been no contagious diseases of any kind.—Hiram E. Archer, Sec.

NO. 14 PLANTATION. No cases of any infectious diseases reported to the board in either year.—Sidney W. Gray, Sec.

NO. 21 PLANTATION, Washington county. 1903. Nothing to report.—Lewis S. Crosby, Sec.

NO. 21 PLANTATION, Hancock county. 1903. No infectious or contagious diseases.—Anton R. Jordan, Sec.

NO. 33 PLANTATION. No infectious diseases during the two years.—George H. Garland, Sec.

OAKLAND. 1902. Three nuisances removed. One case of smallpox, one of diphtheria, twenty-nine of scarlet fever, and two of typhoid fever. About 50% of the people are well protected by vaccination.

1903. Six nuisances reported and removed. Four cases of smallpox, one of diphtheria, eight of scarlet fever, and two of typhoid. The health officer attends to the disinfection usually.—M. S. Holmes, M. D., H. O.

OLD ORCHARD. 1902. Thirty-nine nuisances reported; all removed except one and that is still under consideration. One case of scarlet fever, but no other infectious disease. Our work for the past year has been on general lines. We are still trying

to extend and improve our sewerage system and thereby protect our water supply.—Dr. J. A. Randall, Sec.

1903. Fifteen nuisances reported; twelve removed. Two cases of diphtheria, three of scarlet fever, and two of typhoid. We have made some improvements and hope to do more next year.—A. O. Hill, Sec.

OLD TOWN. 1903. Sixty nuisances reported; forty-eight removed. About eighty-five cases of smallpox, four of diphtheria, and one of typhoid fever. Our disinfection is done at the expense of the householder.—O. B. Fernandez, Sec.

ORIENT. Nothing to report for the two years.—Daniel Maxwell, Sec.

ORLAND. 1903. One case of smallpox and one of diphtheria. Howard D. French, Sec.

ORNEVILLE. One nuisance removed in 1903. No infectious diseases with the exception of one case of scarlet fever and one of typhoid during the same year.—John C. Boober, Sec.

ORONO. 1902. Two nuisances reported; one removed. Three cases of diphtheria and three of typhoid fever. About one-third of the people in this town are well protected by vaccination.

1903. Two nuisances removed. Sixteen cases of smallpox, two of diphtheria, and two of typhoid fever.—E. J. Kelley, Sec.

OTIS. There were not any contagious diseases in town in either year.—A. S. Young, Sec.

OTISFIELD. 1902. One nuisance removed. No infectious diseases except one case of scarlet fever.—E. B. Jillson, Sec.

1903. Twenty cases of scarlet fever, but none of diphtheria or typhoid. We have adopted the use of formaldehyde with a generator and like it very much.—W. W. Hamlin, Sec.

OXFORD. 1902. Six nuisances reported; all removed. Four cases of scarlet fever and three of typhoid. The town pays all the bills for disinfection.

1903. Five nuisances reported, four of which have been removed. Only one case of scarlet fever during the year.—W. L. Mont, Sec.

PALMYRA. Nothing reported for two years except one case of scarlet fever in 1902.—G. W. Applebee, Sec.

PARIS. 1902. Ten nuisances reported and removed. Four cases of scarlet fever, but no other infectious diseases. About 75% of the inhabitants are protected by vaccination.

1903. Ten nuisances removed. One case of diphtheria and one of typhoid fever. There has been no marked improvement only a decided tendency to do away with the individual cess-pool and connect with the river by some sewerage system.—Horatio Woodbury, M. D., Sec.

PARKMAN. Two nuisances removed in 1902 and one in 1903. No contagious diseases except two cases of typhoid fever in 1903. Our town is very healthy as a general rule.—N. M. Cobb, Sec.

PARSONSFIELD. 1903. Nothing reported to the board.—F. G. Devereux, M. D., Sec.

PASSADUMKEAG. 1902. No infectious diseases reported.—Maurice D. Beane, Sec.

PATTEN. 1902. Two nuisances removed. Two cases of typhoid fever.

1903. Two nuisances reported; one removed. Three cases of smallpox. About 80% of the people are protected by vaccination.—Dr. W. T. Merrill, Sec.

PEMBROKE. No contagious diseases during the two years except two cases of diphtheria in 1902 and two of typhoid fever in 1903.—Dr. J. C. Rogers, Sec.

PENOBSCOT. No contagious diseases except two cases of typhoid fever in 1902 and one case in 1903. Formaldehyde has been adopted as a general disinfectant. Our town is usually quite free from contagious diseases.—J. H. Littlefield, Sec.

PERHAM. 1902. Twenty-two cases of diphtheria, but none of scarlet fever or typhoid. For the work of disinfection where the householder would pay, the doctor charged the bill to him; but in most cases, the people were so poor that the disinfection was done at the expense of the town.—W. H. Bragdon, Sec.

1903. As no cases of infectious diseases have been present in town, we have nothing to report. The clean bill of health which we have to offer is very gratifying to us.—B. R. Blackstone, Chr.

PERKINS. 1903. Nothing to report.—Daniel B. Darrah, Sec.

PERRY. 1903. No infectious diseases.—John Humphries, Sec.



PERU. 1902. Six cases of scarlet fever and one of typhoid.—O. O. Tracy, Sec.

1903. Two nuisances removed. One case of typhoid fever, but none of diphtheria or scarlet fever.—Hollis Turner, Sec.

PHILLIPS. No contagious diseases reported during the two years except four cases of scarlet fever in 1902.—Dr. E. B. Currier, Sec.

PHIPPSBURG. Three nuisances removed in 1902. Five cases of scarlet fever during that same year. There was a case in this town where the man's brother came to work for him. The brother was sick at the time with tuberculosis, and died in about a year. The family consisted of the man, his wife, six boys and two girls. This was in 1890. There are now two boys and one girl living, the rest of the family having died of tuberculosis within twelve years. The boys are not well and the girl shows symptoms of tuberculosis now. The house was not disinfected or cleaned in any way until 1902.—Dr. A. F. Williams, Sec.

PITTSFIELD. 1902. Three nuisances reported; all removed. Four cases of scarlet fever and twelve of typhoid. The town is constantly making improvements in the way of sewers, and the board of health are looking after all nuisances as soon as they are reported.—Dr. T. N. Drake, Sec.

PITSTON. One nuisance removed in 1902. One case of diphtheria in 1902 and three of the same disease in 1903. About 25% of the people in this town are protected by vaccination.—S. A. Jewett, Sec.

PLYMOUTH. 1903. No infectious diseases except two cases of smallpox.—E. P. Goodrich, M. D., Sec.

POLAND. 1902. One case of diphtheria, two of scarlet fever and two of typhoid. We look after all drainage and well water. Our board works in harmony with each other and are all well fitted for their positions. We use a formaldehyde generator with good success in all cases.

1903. Two nuisances removed. One case of diphtheria, four of scarlet fever, and one of typhoid. Our board has been very careful the past year to observe any and all conditions pertaining to the health of our citizens.—Martin C. Davis, Sec.

PORTER. No contagious diseases with the exception of three cases of scarlet fever and one of typhoid in 1902 and two cases of typhoid in 1903.—Dr. E. R. Chellis, Sec.

PORTLAND. 1902. One hundred and twenty-five nuisances reported; one hundred removed. Forty-eight cases of smallpox, three hundred and forty-nine cases of diphtheria, twenty-five of scarlet fever, and seventy-six of typhoid fever. Nearly every person in the city is well protected by vaccination. Antitoxin is furnished free by the city.—Edwin L. Dyer, Sec.

POWNALE. We have had nothing to do for the past two years. All we have had is a number of cases of measles.—Dr. S. A. Vosmus, Sec.

PRESQUE ISLE. 1902. Fifty nuisances removed. Two hundred cases of smallpox, five of diphtheria, twenty of scarlet fever, and eight of typhoid. About 60% of the people are protected by vaccination.

1903. Fourteen nuisances removed. Two hundred cases of smallpox, nine of diphtheria, eleven of scarlet fever, and three of typhoid. We have made no improvements of interest during the past year.—Dr. W. F. McNamara, Sec.

PRINCETON. No infectious diseases except two cases of typhoid fever in 1902 and four in 1903.—Dr. S. G. Spooner, Sec.

PROSPECT. 1902. Four cases of scarlet fever and three of typhoid. The town furnishes antitoxin in cases of diphtheria to persons who are very poor.—George B. Brown, Sec.

1903. One case of smallpox and three of typhoid fever.—L. L. Ames, Sec.

RANDOLPH. 1902. Several nuisances reported; all have been removed. Two cases of diphtheria and one of scarlet fever. Over \$3,000 was expended in sewers which will make a great improvement.

1903. Several nuisances removed. Two cases of diphtheria and four of scarlet fever.—H. S. Winslow, Chr.

RANGELEY. 1902. Three nuisances removed. No infectious diseases except one case of typhoid fever. We are working for a sewerage system to run throughout the village.

1903. Two nuisances reported and removed. One case of diphtheria, five of scarlet fever, and one of typhoid. We are using formaldehyde as a disinfectant and like it very much.—F. B. Peabody, M. D., Sec.

RANGELEY PLANTATION. As it has been very healthy in our town for the past two years, there has been no work for the

board of health to do except to keep everything in a sanitary condition.—E. M. Gile, Sec.

RAYMOND. No contagious diseases reported except one case of typhoid fever in 1902 and one of diphtheria and eight of scarlet fever in 1903. A large majority of the people in town are well protected by vaccination.—George M. Leach, Sec.

READFIELD. 1903. Two nuisances removed. No infectious diseases.—W. A. Wright, M. D., Sec.

REED PLANTATION. Two nuisances removed in 1903. No contagious diseases except four cases of diphtheria in 1903.—J. A. McKinnon, Sec.

RICHMOND. 1903. One nuisance removed. Four cases of smallpox and sixteen cases of typhoid fever. The work of the board has been very successful during the past year.—D. S. Richards, M. D., Sec.

RIPLEY. Nothing to report for either year.—A. G. Farrar, Sec.

ROBBINSON. 1902. Two or three nuisances removed. No cases of infectious disease.—Frank R. Leach, Sec.

1903. One nuisance removed. No contagious diseases.—Lincoln Harvell, Sec.

ROCKLAND. 1903. Fifteen nuisances reported; twelve removed. Two cases of smallpox, three of diphtheria, one of scarlet fever, and three of typhoid.—Justin L. Cross, Sec.

ROCKPORT. 1902. Two nuisances removed. Thirty-two cases of scarlet fever. I find by experience that it is necessary for the board to superintend the cleansing and fumigating of infected houses. If left to the householder, in most cases it is not thoroughly done and remains a source of contagion. The householder will cleanse the house at his own expense, but finds fault when we charge him for fumigation; so the town has concluded to pay for fumigation with formaldehyde.

1903. Three nuisances removed. Three cases of smallpox and seven of scarlet fever.—Dr. S. Y. Weidman, H. O.

ROME. 1902. No infectious diseases except one case of typhoid fever.—E. T. Foster, Sec.

1903. No contagious diseases reported to the board.—A. S. Turner, Sec.

ROXBURY. Nothing to report except two cases of scarlet fever in 1903.—A. W. Robbins, Sec.

RUMFORD. 1902. Two nuisances removed. Twelve cases of diphtheria, thirty-one of typhoid, and two of scarlet fever.

1903. Four nuisances reported and removed. Three cases of smallpox, seven of diphtheria, two of scarlet fever, and nine of typhoid. About 90% of the people are vaccinated.—Arthur E. Morrison, Sec.

SACO. 1902. Twenty-seven nuisances reported; all removed except one. Thirty-nine cases of smallpox, thirty-six of scarlet fever, nine of typhoid and five of diphtheria.—Dr. L. E. Willard, Sec.

1903. Twenty-five nuisances reported; twenty-four removed. Thirteen cases of smallpox, thirty-eight of scarlet fever and thirteen of typhoid fever.—Dr. J. D. Cochrane, Sec.

ST. AGATHA. 1903. We have had eight cases of smallpox, all in one family; but no other contagious disease.—Rev. H. Gory, Sec.

ST. ALBANS. Nothing reported to the board except one case of diphtheria in 1902 and one of scarlet fever in 1903.—J. S. Martin, Sec.

ST. GEORGE. One nuisance removed in 1902. Two cases of typhoid fever in 1902 and one of diphtheria and typhoid in 1903. No public or private improvements have been made in town during the past two years. All of the villages in St. George are so situated that we have healthy and natural drainage. When we have contagious diseases to deal with, prompt and careful action is our motto.—Dr. F. O. Bartlett, Sec.

ST. JOHN PLANTATION. 1903. There were no diseases of any kind during the past year.—Alcyme R. Daigle, Sec.

SALEM. No infectious diseases except one case of scarlet fever in 1902.—W. S. Heath, Sec.

SANFORD. 1902. Ten nuisances reported; all of them removed. Four cases of smallpox, two of scarlet fever, and ninety-seven of typhoid fever. We need a sewerage system. At present, nearly all sewage is run into cesspools. We have agitated the matter until the town is expending \$2,500 for a sewer in one of the most dangerous localities and the work will be finished in the early spring.—George E. Allen, Sec.



1903. Twenty-six nuisances reported; twenty-five removed. Two cases of smallpox, seven of diphtheria, four of scarlet fever, and twenty-five of typhoid fever. The work of disinfection is done at the expense of the householder.—Frank C. Leavitt, Sec.

SANGERVILLE. 1903. One case of scarlet fever and one of typhoid.—C. W. Ray, M. D., Sec.

SCARBORO. 1902. Eleven nuisances reported; ten removed. Two cases of smallpox and three of typhoid fever.—Dr. B. F. Wentworth, Sec.

SEARSMONT. No infectious diseases except six cases of diphtheria in 1902 and five of the same disease in 1903.—C. S. Adams, Sec.

SEARSPORT. 1902. Three nuisances removed. Two cases of scarlet fever and one of typhoid.

1903. Seven nuisances reported and removed. One case of diphtheria, and one of typhoid fever.—H. H. Sellers, M. D., Sec.

SEBAGO. 1902. Two cases of diphtheria, three of typhoid, and two of scarlet fever.—Arthur Dyer, Sec.

1903. One nuisance removed. One case of typhoid fever.—A. J. Ward, Sec.

SEBEC. No infectious diseases reported during two years with the exception of one case of scarlet fever in 1902.—D. L. Annis, Sec.

SEBOEIS PLANTATION. Two cases of smallpox in 1902 were all the cases of infectious disease during either year.—J. E. Smart, Jr., Sec.

SEDGWICK. Nothing to report for two years except one case of typhoid fever in 1902 and one of scarlet fever and another of typhoid in 1903.—F. H. Harding, Sec.

SHAPLEIGH. 1902. Nothing to report.—Dr. A. S. Davis, Sec.

1903. We have not had anything to do the past year.—G. I. Berry, Chr.

SHERMAN. 1902. Seventeen cases of scarlet fever and three of typhoid. The local board does all the disinfection at the expense of the town.

1903. One nuisance removed. One case of diphtheria and five of typhoid fever reported. There is much greater interest taken by private individuals and householders as regards the

sanitary condition of their premises than formerly. This has been caused by the rigid requirement of the board of health during the first few years after the organization of the abatement of the nuisances. Now complaints are very few and all cases are promptly attended to. The private improvements have also been large and increasing.—Levi Caldwell, Sec.

SHIRLEY. One nuisance removed in 1903. Four cases of scarlet fever in 1902 and one of smallpox in 1903. About 90% of the town have been vaccinated.—W. W. Sawtelle, Sec.

SIDNEY. 1903. Nothing reported during the year. Have seen a case where tuberculosis was taken by infection. A girl sick with consumption, was employed in a family in town. Another girl helped to care for her, remaining also a short time after the death of the patient. The second girl became the wife of a man in another town near and died in about a year from the time she left off caring for the first patient.—Dr. H. L. Johnson, H. O.

SILVER RIDGE PLANTATION. 1902. Four cases of scarlet fever.—George A. Greaves, Sec.

1903. No contagious diseases.—James L. Smith, Sec.

SKOWHEGAN. 1902. Forty nuisances removed. One case of typhoid fever, but none of diphtheria or scarlet fever.

1903. Six or eight nuisances reported; all removed. Seven cases of smallpox, nineteen of diphtheria, and one of typhoid.—Dr. W. S. Stinchfield, Sec.

SMITHFIELD. Nothing to report during two years except three mild cases of scarlet fever in 1902.—F. H. Clark, Sec.

SOLON. No cases of diphtheria, scarlet fever, or typhoid in either year. I have known a number of cases in this town in which whole families were infected and died of consumption.—S. F. Greene, M. D., Sec.

SOMERVILLE. No contagious diseases in two years except one case of typhoid fever in 1903.—L. W. Soule, Sec.

SORRENTO. 1902. Nothing reported to the board.—L. T. Hovey, Sec.

SOUTH BERWICK. 1902. Forty-three nuisances removed. One case of diphtheria and two of typhoid fever.

1903. Forty-four nuisances reported and removed. Three cases of diphtheria, five of scarlet fever, and two of typhoid.—George F. Clough, Sec.

SOUTHPORT. No infectious diseases during two years except ten cases of diphtheria in 1902.—A. N. Gray, Sec.

SOUTH THOMASTON. No infectious diseases except eight cases of diphtheria, nine of scarlet fever, and two of typhoid fever in 1902, and one of diphtheria in 1903.—George C. Horn, M. D., Sec.

SPRINGFIELD. Nothing reported for two years.—P. H. Jones, M. D., Sec.

STACYVILLE PLANTATION. 1902. Three cases of scarlet fever were all the infectious diseases during the year.—E. J. Parker, Sec.

STANDISH. No contagious diseases during the two years with the exception of six cases of diphtheria and one of typhoid fever in 1903.—L. O. Buzzell, M. D., Sec.

STARK. Nothing reported except three cases of typhoid fever in 1902. Our people are careful and guard against outbreaks of contagious disease. About 50% of them are well protected by vaccination.—J. B. Greateon, Sec.

Stetson. 1902. Nothing to report.—S. J. Ridlon, Sec.

1903. No cases of infectious disease.—D. W. Sheldon, M. D., Sec.

STEUBEN. No diseases reported during two years with the exception of two cases of scarlet and one of typhoid fever in 1902, and one of typhoid in 1903.—A. K. Stevens, Chr.

STOCKHOLM PLANTATION. Two cases of diphtheria and one of scarlet fever in 1902, and two of smallpox and fourteen of diphtheria in 1903.—John E. Berquist, Sec.

STONEHAM. The board has had nothing to do for the past two years except the removal of one nuisance in 1902. The people of this place have been making a number of improvements around their buildings and we hope to escape contagious diseases.—S. A. Stearns, Sec.

STONINGTON. 1902. Three nuisances reported; two removed. Two cases of diphtheria and two of typhoid fever.

1903. Two nuisances reported and one removed. No infectious diseases except four cases of typhoid fever. In the work of disinfection, the householder must pay if able; if not, the town pays the bills.—A. O. Candage, Sec.

STOW. One case of typhoid fever in 1902 and one of scarlet fever in 1903 were all the infectious diseases during the two years.—A. H. Seavey, Sec.

STRONG. One nuisance removed in 1902. No contagious diseases except three cases of scarlet fever in 1903.—Chas. W. Bell, M. D., Sec.

SULLIVAN. No infectious diseases reported except three cases of typhoid fever in 1903.—Dr. F. W. Bridgham, Sec.

SUMNER. Nothing to report except one case of scarlet fever in 1902. We have been very fortunate in having only this one case during the year. S. Robinson, Sec.

SURRY. Nothing reported to the board with the exception of six cases of typhoid in 1902 and three in 1903. About 10% of the people are vaccinated.—Wm. E. Emery, M. D., Sec.

SWANS ISLAND. 1902. One nuisance removed. Fifteen cases of typhoid fever. These cases were all traced to a well into which a sinkdrain emptied, the pipe having broken off a few feet above the well. The board of health is doing much more effective work in preventing the spread of contagious diseases as well as instructing about hygienic surroundings. Patients sick with contagious diseases are at once isolated, the source of the water supply carefully looked into, drainage required to be carried as far as possible from dwellings—all of which are thoroughly disinfected during the continuance of the disease. Not among the least of the good work of the board is the teaching of the poorer class the necessity of good air—well-ventilated rooms—and the use of the bath. Insistence in the last two named often does more good than all other means combined.

1903. No infectious diseases during the year.—H. W. Small, M. D., H. O.

SWANVILLE. 1902. Nothing to report.—A. T. Nickerson, Sec.

SWEDEN. No contagious diseases reported during the two years. This is a very small town. We are seven miles from the nearest railroad so there is no floating population, and that accounts for our not having any more infectious diseases.—Alvin S. Bailey, Sec.

TEMPLE. 1902. Three nuisances removed. Two cases of diphtheria, but none of scarlet fever or typhoid. A very small



percentage of the people in this town are protected by vaccination.

1903. Four nuisances reported; three removed. One case of diphtheria and four of scarlet fever.—H. L. Sampson, Sec.

THE FORKS PLANTATION. 1902. Fourteen cases of diphtheria and seven of scarlet fever.—C. H. Young, Sec.

1903. One nuisance removed. No infectious diseases.—W. P. Forsyth, Sec.

THOMASTON. 1902. One case of diphtheria and two of typhoid fever. About 95% of the population are well protected by vaccination.

1903. Two cases of smallpox, one of diphtheria, and thirteen of scarlet fever.—J. Edwin Walker, M. D., Sec.

THORNDIKE. One nuisance removed in 1902. One case of diphtheria in 1902 and three of typhoid fever in 1903.—B. P. Hurd, M. D., Sec.

TOPSFIELD. We have not been called upon to do any work as there have been no contagious diseases reported during the past two years.—John J. Kneeland, Sec.

TOPSHAM. 1902. One nuisance removed. Four cases of diphtheria, but no other contagious disease reported.—Dr. H. O. Curtis, H. O.

1903. Five nuisances reported; all removed. Twelve cases of diphtheria.—Dana S. Colby, Sec.

TREMONT. 1903. Nothing to report.—Eben B. Clark, Sec.

TRENTON. Two nuisances removed in 1902. No contagious diseases in either year.—William H. Ober, Sec.

TRESCOTT. Nothing to report except one case of typhoid fever in 1902.—John Saunders, Sec.

TROY. Three cases of scarlet fever in 1902, but no infectious diseases in 1903.—Dr. M. T. Dodge, Sec.

TURNER. 1902. One case of diphtheria and one of typhoid fever. A large proportion of the people are protected by vaccination.

1903. Two nuisances removed. Three cases of smallpox, one of diphtheria, and two of typhoid fever. The attending physician superintends the disinfection.—J. P. Waterman, Sec.

UNION. Two cases of diphtheria in 1902; also one in 1903 and eight cases of scarlet fever.—Dr. L. W. Hadley, Sec.

UNITY. One nuisance removed in 1902. No infectious diseases except two cases of scarlet fever in the same year.—Joseph Farwell, Sec.

UNITY PLANTATION. 1902. Nothing to report.—J. B. Getchell, Sec.

1903. No contagious diseases.—S. P. Libby, Sec.

UPTON. 1903. No business to attend to during the year.—Frank W. Bragg, Sec.

VANCEBORO. One nuisance removed in 1903. No contagious of infectious diseases during two years.—S. Johnston, M. D., Sec.

VASSALBORO. 1902. Two cases of typhoid fever, but none of scarlet fever or diphtheria.—E. H. Cook, Sec.

1903. Seven nuisances reported; all removed. No contagious diseases reported.—George H. Bussell, Sec.

VEAZIE, 1902. One case of diphtheria. As a general rule, the town pays all the bills for disinfection.—Roderick P. Hathorn, Chr.

1903. Two cases of smallpox, one of diphtheria, one of scarlet fever, and one of typhoid.—Albert J. Spencer, Sec.

VERONA. No contagious diseases in town during the past two years.—A. H. Whitmore, Sec.

VIENNA. No infectious diseases except one case of diphtheria in 1902. About 25% of the people are protected by vaccination.—E. N. Allen, Sec.

VINALHAVEN. 1902. Eleven nuisances reported and removed. Sixteen cases of scarlet fever.—Dr. E. H. Lyford, Sec.

WADE PLANTATION. One nuisance removed during each year. Thirty-five cases of smallpox and one of diphtheria in 1903.—N. N. Rideout, Sec.

WAITE. Nothing to report for two years.—J. C. Neale, Sec.

WALDO. 1902. We have had no contagious diseases during the year.—C. W. Shorey, Sec.

WALDOBORO. 1902. One case of diphtheria and one of typhoid fever. The work of disinfection is done by the attending physician, the householder paying the expenses unless too poor when it is done by the local board of health at the expense of the town.—George H. Coombs, M. D., Sec.

1903. One nuisance removed. Twelve cases of diphtheria, two of scarlet fever, and one of typhoid.—O. V. Hassner, Sec.

WALES. 1903. No contagious diseases except six cases of scarlet fever.—J. F. Greenwood, Sec.

WALLAGRASS PLANTATION. 1902. Nothing reported during the year.—Vital Labbé, Sec.

1903. Four nuisances removed. Forty-six cases of smallpox and six of diphtheria. About four-fifths of the people are well protected by vaccination.—Dr. A. O. Boulay, H. O.

WALTHAM. No contagious diseases during the two years.—A. K. Haslem, Sec.

WARREN. 1902. One case of diphtheria.—J. S. Norton, M. D., Sec.

1903. Two cases of smallpox and two of scarlet fever. We have had very little to do during the past year.—J. M. Wakefield, M. D., H. O.

WASHBURN. 1902. One nuisance removed. One case of smallpox and two of typhoid fever. Not much has been done here as everything is in good order.

1903. Two nuisances removed. Sixty-five cases of smallpox and twelve of measles.—David L. Duncan, Sec.

WASHINGTON. No infectious diseases with the exception of one case of smallpox and five of typhoid fever in 1902.—B. K. Ware, Sec.

WATERBORO. No contagious diseases except one case of diphtheria in 1902. We have had a drain laid from a stagnant pool that was within one hundred and fifty feet of a school-house as the odor from the water was offensive in warm weather. The work was done at the expense of the town.—Wm. A. Follette, Sec.

WATERFORD. 1902. Two nuisances reported; one removed. Two cases of diphtheria. A formaldehyde generator has been purchased by the town and simplifies the work of disinfection very much.

1903. One nuisance removed. Five cases of typhoid fever. There have been some improvements made in the drainage of the town.—I. F. Jewett, Sec.

WATERVILLE. 1902. One hundred nuisances removed. Eight cases of smallpox, five of diphtheria, seventy-five of scar-

let fever, and seventy-five of typhoid fever.—L. G. Bunker, M. D., Sec.

1903. Eighty-six nuisances reported; eighty-one removed. One case of smallpox, sixty-five of diphtheria, and four of scarlet fever. There have been quite a number of feet of sewer laid and we have also built a pest house which will accommodate fifteen patients.—Dr. J. L. Fortier, Sec.

WAYNE. Nothing to report except the removal of a nuisance in 1903.—F. L. Chenery, M. D., Sec.

WEBSTER. Three nuisances removed in 1903. No infectious diseases except three cases of diphtheria in 1902 and one of scarlet fever in 1903.—James G. Jordan, Sec.

WEBSTER PLANTATION. One nuisance removed in 1903. Nothing else to report except one case of diphtheria in 1903.—A. A. Patch, Sec.

WELD. Nothing reported except the removal of a nuisance in 1902.—W. H. Scammon, Sec.

WELLINGTON. 1903. Three cases of diphtheria, but none of scarlet or typhoid fever.—Herbert Lawrence, Sec.

WESLEY. No cases of infectious disease during the two years.—S. G. Day, Sec.

WEST BATH. 1902. Nothing to report.—C. W. Campbell, Chr.

WESTBROOK. 1902. Four nuisances removed. One case of smallpox, seven of diphtheria, nine of typhoid, and thirty of scarlet fever. Since the law was passed creating a board of health, the people have been educated from year to year so that in this city, they demand the best sanitary condition and the people will not tolerate what might have been allowed ten years ago.

1903. Seven nuisances reported and removed. Seven cases of diphtheria, twelve of scarlet fever, and fifteen of typhoid. The city is pushing its sewer system as fast as possible.—H. K. Griggs, Sec.

WESTFIELD PLANTATION. 1902. Nothing to report except one case of scarlet fever. About 75% of the people in this town are well protected by vaccination.—P. H. Smith, Sec.

1903. One case of typhoid fever, but none of diphtheria, smallpox, or scarlet fever.—J. Frank Taylor, Sec.

WEST FORKS PLANTATION. 1902. No contagious diseases except four cases of diphtheria.—F. J. Durgin, Sec.



1903. Nothing reported to the board.—John H. Morris, Sec.  
WEST GARDINER. Nothing reported for two years.—Wm. P. Haskell, Sec.

WESTMANLAND PLANTATION. No infectious diseases in either year.—Emil Carlson, Sec.

WESTON. We have had no contagious diseases in town for two years.—Varney M. Putnam, Sec.

WESTPORT. One nuisance removed in 1903. Three cases of diphtheria in the same year. Our town is small and very healthy so that the board of health have very little to do as a general thing. C. E. Colby, Sec.

WHITEFIELD. One nuisance removed in 1903. The inhabitants of this town have been remarkably free from contagious diseases the past two years and so the work of the board has been light.—Marcellus Philbrick, Sec.

WHITING. 1902. There were no contagious diseases in our town last year.—W. H. Leighton, Chr.

WHITNEYVILLE. Nothing to report for two years.—Chas. F. Bridges, Sec.

WILLIAMSBURG. No infectious diseases for two years.—U. H. Sumner, Sec.

WILLIMANTIC. It has been very healthy for the past two years.—C. C. Norton, Sec.

WILTON. No contagious diseases reported except two cases of typhoid fever in 1902. In 1903 there were seven cases of diphtheria and fourteen of scarlet fever. There have been no improvements the past year.—A. B. Adams, M. D., Sec.

WINDHAM. 1903. Four cases of scarlet fever and one of typhoid.—C. F. Parker, M. D., Sec.

WINDSOR. 1902. One nuisance removed. No cases of infectious disease.

1903. Two nuisances reported and removed. Two cases of typhoid fever. During the winter there were a number of cases of whooping-cough and chickenpox in several of the schools which were closed on that account, and during vacation all of the schoolhouses and school-books were thoroughly disinfected with formaldehyde.—C. F. Donnell, Sec.

WINN. One nuisance removed in 1903. No infectious diseases except one case of typhoid fever in 1903.—J. R. Cromwell, Sec.

WINSLOW. 1902. Five nuisances removed. Twenty-four cases of smallpox, ten of scarlet fever, and seventeen of typhoid. In the early part of the summer, the board required the sanitary conditions of the tenement houses in the village part of the town to be considerably improved.

1903. Seven nuisances reported and removed. Two cases of smallpox, twelve of diphtheria, and two of typhoid fever. In two instances the past year there has been a death from tuberculosis that would appear to be the result of contact with another member of the family infected with tuberculosis. Where diphtheria has broken out in large families of children, antitoxin has frequently been used to immunize the well members with satisfactory results.—George W. Patterson, Sec.

WINTER HARBOR. One nuisance removed in 1902. One case of typhoid fever in 1902 and three cases in 1903. If the householder is able to pay for the work of disinfection, they are required to; if not, the town bears the expense.—Joseph M. Gerish, Sec.

WINTERPORT. Three nuisances removed in 1903. Three cases of diphtheria and one of scarlet fever during the same year; also eleven cases of diphtheria in 1902.—T. H. Sproul, Sec.

WINTERVILLE PLANTATION. Nothing to report for either year except three cases of typhoid fever in 1902.—Remie Labbie, Sec.

WINTHROP. 1902. Two nuisances removed. No infectious diseases except one case of typhoid fever. The disinfection is done at the expense of the town.

1903. Three nuisances reported; all removed. Seven cases of smallpox and five of typhoid fever.—H. E. Foster, Sec.

WISCASSET. Two nuisances removed in 1903. Three cases of diphtheria during the same year.—Dr. L. C. Bickford, Sec.

WOODLAND. 1902. No contagious diseases reported with the exception of one case of diphtheria.—H. B. Pratt, Chr.

WOODSTOCK. 1902. One nuisance removed. One case of scarlet fever and one of typhoid. Quite a number of citizens have put in private sewers during the past year.

1903. Four nuisances reported and removed. Only one case of typhoid fever during the year. Private sewerage and drain-

age systems have been improved during the past year to quite an extent.—E. B. Clark, M. D., Sec.

WOODVILLE. Nothing to report for the two years.—M. L. Leavitt, Sec.

YARMOUTH. 1902. One nuisance removed. Four cases of scarlet fever and one of typhoid.

1903. Eight nuisances reported; seven removed. One case of diphtheria, three of scarlet fever, and one of typhoid fever.—L. R. Cook, Sec.

YORK. 1902. One nuisance removed. One case of diphtheria, six of scarlet fever, and four of typhoid fever. Most of the people in this town are well protected by vaccination.

1903. One case of smallpox and one of scarlet fever. We have been for some years devoting some thought to consumption, and we disinfect as thoroughly as for scarlet fever.—Dr. John C. Stewart, Sec.

## STATE LABORATORY OF HYGIENE.

## REPORT OF THE DIRECTOR.

*To the State Board of Health:*

GENTLEMEN:—I herewith submit a report of the work in the Laboratory of Hygiene for the thirteen months beginning September 1, 1903, and ending September 30, 1904. Work began to come to the Laboratory in August, 1903, and there has been a steady increase up to the present time.

The records show that 427 specimens of sputum have been examined for tubercle bacilli, that 634 cultures for diphtheria bacilli have been made, and that 187 specimens of blood have been tested for the Widal reaction. Aside from this regular or more routine work of the Laboratory, 956 samples of water were examined for colon bacilli, 211 samples of water have received a sanitary analysis, and 1,529 tests have been made to determine the efficiency of formaldehyde liberated by the permanganate process.

That the outfits sent out by the Laboratory for the use of physicians and local boards of health may always be accessible in all parts of the State arrangements have been made with the following druggists to keep them on hand at all times.

Andover, Dr. F. E. Leslie.	Calais, Percy L. Lord.
North Anson, H. F. Holley.	Camden, L. M. Chandler.
Athens, L. C. Williams.	Canton, Nathan Reynolds.
Auburn, Bumpus & Getchell.	Caribou, S. L. White.
Augusta, J. F. Young.	Castine, Wm. A. Walker.
Bangor, East Side Pharmacy Co.	Cherryfield, Wm. A. Van Wart, M. D.
Bar Harbor, Morrison Pharmacy.	Clinton, P. L. Cotton.
Bath, Walter G. Webber.	Corinna, H. J. Goulding.
Belfast, Wm. O. Poor & Son.	Cornish, George H. Parker.
Bethel, G. R. Wiley.	Damariscotta, A. H. Snow.
Biddeford, Moran Brothers.	Danforth, Danforth Drug Store.
Bingham, Lander & Moore.	Dexter, E. A. Brewster & Son.
Blaine, Dr. A. J. Fulton.	Dixfield, J. P. Johnston.
Boothbay Harbor, Harris and McClearn.	Dover, Elmer E. Cole & Co.
Bridgton, Frank P. Bennett.	Eastport, E. E. Shead & Co.
Brunswick, F. H. Wilson.	Ellsworth, George A. Parcher.
Buckfield, J. A. Ramson.	Fairfield, George E. Wilson.
Bucksport, Richard B. Stover.	Farmington, Hardy & Tarbox.



Fort Fairfield, Scates & Co.	Phillips, W. A. D. Cragin.
Fort Kent, Stanley Burrell.	Phippsburg, A. F. Williams, M. D.
Foxcroft, W. Buck & Co.	Pittsfield, H. W. Ferguson.
Freeport, Thomas & Lunt.	Portland, Brown & Turner.
Fryeburg, Charles T. Ladd.	Portland, W. W. Foss.
Gardiner, Jackson Bros.	Portland, George C. Frye.
Greenville, I. Augustus Harris.	Portland, Chapman & Wyman.
Guilford, E. W. Genthner.	Presque Isle, S. W. Boone & Co.
Hallowell, W. D. Spaulding.	Readfield, G. W. & M. W. Manter.
Harrison, Chas. L. Jackson.	Richmond, W. A. Ribber.
Hartland, A. W. Miller.	Rockland, T. H. Donahue.
Houlton, H. J. Hathaway Co.	Rockport, A. D. Champney.
Island Falls, S. R. Crabtree.	Rumford, J. W. Stuart.
Ivesboro, Dr. H. F. Dolan.	Sabattus, E. Woodside.
Jackman, B. E. Larrabee, M. D.	Saco, C. H. Sawyer.
Jonesport, F. B. Adams.	Sanford, George G. Brown & Co.
Kennebunk, A. W. Meserve.	Sangerville, H. L. Denamore.
Kingfield, L. L. Mitchell.	Skowhegan, George E. Sampson.
Knightville, G. E. Blisb.	Solon, L. W. McIntire.
Lewiston, Walter W. Parmalee.	Somersworth, N. H., J. C. Hurd.
Lincoln, Perley Cotton.	South Paris, F. R. Shurtleff & Co.
Livermore Falls, E. P. Smart.	South Waterboro, Dr. W. J. Downs.
Lubec, A. W. Kelley.	South Windham, D. M. Rand.
Machias, D. A. Curtis & Co.	Springfield, Bert G. Jewett, M. D.
Madison, F. A. Manter.	Strong, Chas. E. Dyer.
Mechanic Falls, Merrill & Denning.	Thomaston, G. I. Robinson Drug Co.
Milbridge, Dr. J. A. Walling.	Troy, Dr. Mark T. Dodge.
Millinocket, Wm. J. Heebner.	Vinalhaven, Lyford & Ginn.
Milo, W. S. Owen.	Waldoboro, E. E. Benner's Drug Store.
Monmouth, The E. A. Dudley Co.	Washburn, Washburn Drug Co.
Monson, Ray M. Hescocck.	Waterville, W. C. Hawkes & Co.
Newport, G. M. Barrows.	Westbrook, C. B. Woodman.
Norridgewock, Dr. J. D. Ames.	Winn, The Winn Drug Store.
North Berwick, R. H. Hurd.	Winterport, T. C. Atwood.
Old Town, C. A. Lowe Drug Co.	Winthrop, C. P. Hannaford.
Orono, Chas. F. Nichols.	Yarmouthville, L. R. Cook.
Oxford, George H. Jones.	York Village, D. A. Stevens.
Patten, Patten Drug Store.	

*Diphtheria.*—The Laboratory has been of great value to many physicians and local boards of health in determining the nature of throat affections which might or might not be diphtheria. Again it has been of great service in showing whether the diphtheria bacilli have or have not disappeared from the throat, thus indicating the time when the patient may safely be released from quarantine. The physicians were thus relieved from the responsibility of guessing when the quarantine may safely be raised. The means for insuring public safety have thereby been greatly increased. Under any reasonable fixed and fast rule relating to the length of quarantine, some households would be kept in quarantine longer than the bacteriological examination would show to be necessary, while in other cases they would be released several days before the bacilli had disappeared from the

throat, and while the patients still remained in an infectious condition. In some towns the Laboratory help has been of inestimable value by showing the diphtheritic nature of cases which had otherwise been diagnosed by the attending physician.

The outfit for diphtheria used during the past year has given very satisfactory results. It has consisted of a swab only, enclosed within its test tube and its shipping case. After the swabs have been used and returned to the Laboratory blood serum tubes have been inoculated with very uniformly good results. The only desirable change which has been suggested to the mind of the director has been a modification of the transit cases so that they may be returnable by mail, and it is hoped that before long this arrangement will be brought about. The same remark is also applicable to the outfits for tuberculosis. The following blank accompanies each diphtheria outfit.

CULTURE RESULT	{	MAIL?.....
TO BE SENT BY		TELEPHONE NUMBER?.....
		TELEGRAPH?.....

#### DIPHTHERIA.

This blank must be filled in every case.

Name of physician,.....  
 Address of physician,.....  
 Name of patient,..... Age,..... Sex,.....  
 Has the case been reported on before?..... If so, date,.....  
 Date and hour of using swab,.....  
 Date of earliest symptoms,.....  
 Temperature, .....  
 Location of exudate,.....  
 Any local application shortly before swab was used?.....  
 .....  
 Clinical diagnosis, .....

RETURN BOX BY EXPRESS ONLY.

*All charges of transmission must be paid by the party sending the tube.*

Indicate in each case how reply shall be sent. (See top of page).

(OVER)

## REMARKS.

.....  
 .....  
 .....

## DIRECTIONS FOR TAKING SPECIMENS.

Do not allow swab to touch anything but the surface on which you wish a report.

The patient should be placed in a good light, and, if a child, held properly. In cases where it is possible to get a good view of the throat, depress the tongue and rub the cotton swab gently, *but freely*, against any visible exudate, *revolving the wire between the fingers*, so as to bring all portions of the swab in contact with the mucous membrane or exudate. In other cases, including those in which the exudate is confined to the larynx, *avoiding the tongue*, pass the swab back as far as possible, and rub it freely as described above against the mucous membrane of the pharynx and tonsils. Then carefully replace the swab in tube, plug with the cotton, wrap this blank (after being carefully filled out) around the tube, place in wooden case, screw together firmly, and forward by express, prepaid, as per label, to Augusta.

Unsatisfactory cultures, exhibiting insufficient growth or contamination by foreign bacteria, usually result from failure to follow carefully the above directions. A report will be forwarded as soon as possible by mail, telegraph, or telephone.

(OVER)

*Tuberculosis.*—While some of the specimens of sputum examined have shown that the patients were expectorating countless millions of tubercle bacilli daily, many other samples contain but few of these bacilli. Specimens from some patients who were thought to have simply bronchitis had tubercle bacilli in abundance. It is just this class of patients who are a serious menace to our communities. In these days of public enlightenment in regard to hygienic matters, some precautionary measures of some value are observed in every intelligent household when it is known that one of the members of the family is a consumptive; but when a case of pulmonary tuberculosis masquerades under the false diagnosis of chronic bronchitis, or

whatnot, there is in many of these homes extreme danger for the other members of the family. Not only do such persons unintentionally endanger relatives and friends, but their infectious sputum tends to make any public place much frequented by them more or less a source of danger to others. It is hoped that the laboratory is and may continue to be in this direction as well as in many others, a means of preventing the extension of infection to other persons in the sick one's own home and to other persons in other families.

The tuberculosis outfit consists of a box containing a wide-mouthed one-ounce bottle. When sent out, the bottle contains a small quantity of a five per cent. solution of carbolic acid. This does not interfere with the microscopical examination of the sputum and the small quantity of sputum required is thus rendered somewhat safer in handling.

The following blank giving directions for collecting the sputum is sent with each bottle.

SEE OTHER SIDE FOR DIRECTIONS. READ CAREFULLY.

#### TUBERCULOSIS.

Regular Outfits, Supplied by Culture Stations, Must be Used for Specimens.

#### SPECIMENS FOR EXAMINATION.

Doctor's name, .....  
 City or town, .....  
 Patient's name, .....  
 Age, ....., Sex, .....  
 Occupation, .....  
 Number of specimen (From this patient), .....  
 Sputum—When was specimen discharged? .....  
 Duration of disease, .....  
 Are there any other cases in same household? .....  
 If so, how many? .....  
 Clinical diagnosis, .....  
 .....

RETURN THIS BLANK FILLED OUT, WITH THE SPECIMEN.

All charges for transmission must be paid by the party sending the specimen. Report will be sent by mail, as soon as possible.

Received, .....	} Do not fill these lines.
Result, .....	
Reported, .....	

(OVER)



## REMARKS:

.....  
 .....

## MAINE STATE BOARD OF HEALTH.

Laboratory of Hygiene, Augusta.

## DIAGNOSIS OF TUBERCULOSIS.

## DIRECTIONS FOR COLLECTING SPUTUM.

Outfits for the collection of sputum, including bottles containing five per cent. carbolic acid, and blanks for particulars of cases with copies of these directions, will be found at the regular culture stations.

*\* Specimens will not be accepted unless submitted in the bottles provided for the purpose by the Laboratory.*

*Specimens will not be examined if leaking from the bottle has occurred.*

*Report will not be forwarded unless the particulars of the case are sent with the specimen.*

The expectoration discharged in the morning is preferred. If the expectoration be scanty, the entire amount discharged in twenty-four hours should be collected. Care should be taken that the contents of the stomach, articles of food, etc., are not discharged during the act of expectoration and collected instead of pulmonary sputum. Purulent, cheesy, and mucopurulent sputum most frequently contain the bacilli; pure mucus, blood, or saliva do not as a rule contain the bacilli. When hemorrhage has occurred, some purulent, cheesy, or muco-purulent sputum should, if possible, be collected for the examination.

(See other side also.)

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\* These rules have been adopted because the examinations of tuberculous sputum entails some danger to the examiner if indiscriminate outfits are used.

In all cases in which the bacillus of tuberculosis is not found, there is need of keeping in mind the following warning which is given upon the report blank: "The Demonstration of the presence of tubercle bacilli in the sputum proves conclusively the

existence of tuberculosis, but the absence of tubercle bacilli or the failure to find them microscopically does not exclude the existence of the disease. If the case is still regarded clinically as tuberculosis, other specimens should be sent for examination." The danger of drawing positive or hasty conclusions from negative results is well illustrated in a recent instance. A first sample of sputum received from the patient was heavily loaded with the tubercle bacillus. Samples from the same patient examined by competent bacteriologists soon after failed to reveal the presence of bacilli. A second sample subsequently received in the laboratory again showed the bacilli in abundance, and the other men who had before failed to get positive results in their examinations, confirmed the findings in a portion of this second sample which was returned to them from the laboratory.

*Typhoid Fever.*—The typhoid fever outfit consists of an envelope, a wooden mailing case, and a glass slide accompanied with the following blank to be filled and directions for collecting the specimen of blood. The outfit is very simple and convenient for the physician to use and is conveniently returned by mail to the laboratory while the blood neither deteriorates nor becomes contaminated by bacterial growth as is more than likely to occur with specimens of fluid blood or serum.

SEE OTHER SIDE FOR DIRECTIONS. REED CAREFULLY.

### TYPHOID FEVER.

#### SPECIMEN FOR EXAMINATION.

Doctor's name,.....  
 City or town,.....  
 Patient's name,.....  
 Age,....., Sex.....  
 Occupation, .....  
 Date of earliest symptoms,.....  
 Date specimen taken,.....  
 Has patient previously had typhoid fever?.....  
 If so, how long ago?.....  
 How was present illness contracted?.....  
 Has the patient been away during the month previous to illness?  
 .....  
 If so, where?.....  
 Clinical diagnosis,.....

RETURN THIS BLANK, FILLED OUT, WITH THE SPECIMEN.

All charges for transmission must be paid by the party sending the specimen; and also telegraph or telephone charges in reporting results. Shall report be sent by mail, telegraph, or telephone?

(OVER)

REMARKS:

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DIRECTIONS FOR PREPARING SPECIMENS OF BLOOD.

1. Cleanse the skin of the lobe of the ear, avoiding the use of bichloride of mercury, carbolic acid or other strong reagent. Soap and water and then carefully dry the part is recommended.
2. Prick the lobe deeply to ensure a free escape of blood, manipulating the lobe with the fingers, if necessary, to secure a sufficient amount. A surgical needle may be used for the puncture.
3. Avoid the first two or three drops, which should be wiped away. Two large drops are then placed about an inch apart on the same side of the glass slide. Dry the drops without using heat and then place the slide in the holder and fasten holder with elastic band and mail to the laboratory in the addressed envelope.

J. P. RUSSELL, *Director.*

## WATER ANALYSIS—REPORT OF THE CHEMIST.

I enclose the report of the water analyses made at the Laboratory of Hygiene from its opening on August 1st to December 31st, 1903.

The analyses made during that time numbered 64. The great majority of these were analyses of well waters made on the request of physicians; some few were made on applications of persons just opening new wells or springs; and, in the cases of Lewiston and Damariscotta, the public water supply was examined for the interested parties. Reports were made on each sample analyzed and copies sent to the persons who requested the analysis.

The analyses made were those technically known as "Sanitary Analyses," including the determination of color; odor; turbidity; sediment; total and fixed solids; hardness; alkalinity; oxygen consumed; chlorine; nitrite; nitrate; free and albuminoid ammonias. In addition presumptive tests for the presence of the colon bacillus were made with Smith broth, and whenever the water was conveyed through lead pipe the water was examined for lead. In the case of highly colored waters, containing little vegetable material, iron determinations were also made.

I enclose a tabulation of the Sanitary analyses. The results are expressed in parts per 100,000. Color is expressed in terms of the Hazen cobalt-platinum standard, and turbidity in terms of the Silica standard; both, however, in parts per 100,000.

H. D. EVANS, *Chemist, Laboratory of Hygiene.*



# WATER ANALYSIS.

## ANALYSES OF SAMPLES OF WATER—EXPRESSED IN PARTS PER 100,000.

Number.	Town.	Source.	Hardness.	Alkalinity.	Oxygen consumed.	Chlorine.	Nitrite.	Nitrate.	AMMONIA.	
									Free.	Albuminoid.
1	Fort Fairfield	Town supply	11.28	11.2	0.23	0.2	0	0	.0018	.0085
2	Benton Station	Spring	12.6	11.5	0.09	1.7	0	0.17	.001	.0025
3	Waldoboro	Well	15.7	11.8	0.37	5.8	0.014	0.4	.028	.016
4	Northport	Spring	1.7	1.3	0.02	0.63	0	Trace	.0003	.....
5	Northport	Well	8.75	8.5	0.05	0.64	0	0	.0001	.0011
6	Northport	Reservoir	8.6	8.0	0.05	0.60	0	0	.0004	.0004
7	Portland	Well	23.3	15.3	0.05	14.1	0.005	0.32	.009	.0043
8	Portland	Spring	5.5	3.6	0.05	1.0	Trace	0.02	.0002	.0004
9	Machias	Well	3.7	3.5	0.13	1.85	8.0086	6.2	.0017	.0048
10	Winlow	.....	4.3	3.5	0.05	0.35	0	0	.0011	.0007
11	Belgrade Lakes	Spring	2.3	1.5	0.13	0.3	0	0.02	.0005	.0007
12	Camden	Spring	2.0	1.2	0.01	0.38	0	Trace	.0008	.0009
13	Alexander	.....	3.0	2.2	0.01	0.33	Trace	0.06	.0008	.0026
14	Saco	Well	4.3	2.6	0.04	1.0	0	0.1	.015	.014
15	Blaine	Well	20.1	19.3	0.05	3.0	Trace	0.48	.0087	.0053
16	Bridgton	Well	1.3	1.3	0.07	0.1	0	Trace	.0009	.0041
17	Bridgton	Well	3.1	1.3	0.34	0.13	0	0	.0014	.0015
18	Convene	.....	1.8	0.5	0.01	0.1	0	Trace	.0023	.0024
19	Millinocket	Town supply	1.9	0.9	0.73	0.1	0	Trace	.0038	.005
20	Waldoboro	Well	15.4	11.3	0.25	5.7	0.013	0.53	.018	.014
21	Saco	Well	4.1	2.6	0.04	1.0	Trace	0.14	.007	.0083
22	Saco	Well	4.3	2.6	0.01	1.0	Trace	0.14	.010	.0024
23	Saco	Well	4.3	2.1	0.13	0.45	Trace	0	.0008	.0055
24	Sargentville	Well	4.0	2.5	0.14	0.13	0	0	.0068	.0035
25	Augusta	Spring	3.7	3.0	0.16	0.39	0.005	0.04	.004	.008
26	Winlow	.....	13.7	10.9	0.04	0.40	0	0	.006	.0021
27	North Bridgton	Well	3.3	1.6	0.04	0.52	0	0.10	.0005	.0005

28 Vinahaven.....	Well.....	3.5	1.4	0.12	3.52	Trace	Trace	.002	.0047
29 Acon.....	Well.....	4.6	7.5	0.27	0.37	0	0	.002	.007
30 Hebron.....	Spring.....	4.9	0.72	0.12	0.07	Trace	Trace	.0018	.0018
31 Augusta.....	Well.....	6.4	2.3	0.12	0.70	Trace	Trace	.0018	.0044
32 Stanshish.....	.....	3.8	0.06	0.04	0.04	Trace	0	.002	.0043
33 East Seasmont.....	.....	1.3	0	0.04	0.35	0	0	.002	.0011
34 Stanshish.....	.....	4.07	1.0	0.04	0.78	0	0	.0017	.0039
35 Hebron.....	.....	3.5	0.89	0.03	0.37	0	0	.0017	.0036
36 Castine.....	.....	8.7	4.8	0.06	1.06	0	0	.001	.0044
37 Lisbon Falls.....	Spring.....	4.8	2.7	0.05	0.28	0	0	.0018	.0039
38 Lisbon Falls.....	Well.....	6.3	4.3	0.15	0.99	0	0	.006	.0041
39 Augusta.....	Well.....	12.6	7.1	0.05	1.72	0	0	.0079	.0047
40 Lincolnville.....	Well.....	7.9	7.1	0.19	3.96	0	0	.018	.0066
41 Eastport.....	Well.....	17.4	7.1	0.15	5.13	0	0	.032	.0086
42 Cambridge.....	Well.....	3.9	0	0.05	0.05	Trace	Trace	.0049	.0049
43 Mt. Vernon.....	Well.....	12.8	5.2	0.16	2.75	Trace	Trace	.0006	.0043
44 Peaks Island.....	Well.....	8.6	4.3	0.08	2.63	0.0017	0.88	.023	.0066
45 Waterville.....	Well.....	10.1	5.9	0.15	1.90	Trace	Trace	.003	.0041
46 Brownfield.....	Well.....	2.0	1.7	0	0.15	0	0	.0008	.0024
47 Freedom.....	Well.....	33.8	25.2	0.16	4.25	Trace	Trace	.0062	.0112
48 York.....	Well.....	5.7	2.4	0.12	3.86	0.0008	1.0	.0024	.0101
49 Westfield.....	Well.....	21.0	14.6	0.04	0.80	Trace	Trace	.0007	.0025
50 Islesford.....	Well.....	3.2	1.4	0.15	4.06	0	0	.0005	.0025
51 Winthrop.....	Well.....	5.5	2.8	0.05	0.70	0	0	.0017	.0028
52 Winthrop.....	Well.....	8.1	4.9	0.20	3.40	Trace	Trace	.0061	.0144
53 Lewiston.....	Water works.....	2.0	0.7	0.25	0.25	0	0	.0014	.0134
54 Livermore Falls.....	Well.....	8.9	4.7	0.33	1.90	Trace	Trace	.0008	.0034
55 Livermore Falls.....	Spring.....	1.7	0.18	0.25	0.15	0	0	.0004	.002
56 Lisbon Falls.....	Brook.....	3.9	1.0	0.33	0.35	0.0004	0.20	.0022	.0115
57 Lisbon Falls.....	River.....	2.8	1.0	0.43	0.41	Trace	Trace	.0017	.018
58 Skowhegan.....	Well.....	4.0	1.4	0.30	0.90	Trace	Trace	.0021	.0042
59 Damariscotta.....	Water works.....	1.5	0.7	0.35	0.47	0	0	.0013	.0133
60 Damariscotta.....	Water works.....	1.5	0.7	0.34	0.47	0	0	.0013	.0133
61 Augusta.....	Well.....	5.3	1.4	0.10	0.63	Trace	Trace	.0022	.0023
62 Lewiston.....	Water works.....	1.8	0.7	0.20	0.25	0	0	.0006	.0105
63 Lewiston.....	Water works.....	1.9	0.75	0.20	0.25	0	0	.0011	.007
64 Livermore Falls.....	Well.....	2.5	1.5	0.04	0.35	0	0	.0004	.0012

## FORMALDEHYDE DISINFECTION.

Experimental Work Done in the Laboratory of Hygiene,  
Augusta, Maine.

By HENRY D. EVANS, Chemist, and DR. J. P. RUSSELL, Bacteriologist.

## REPORT OF THE CHEMIST.

At the present time formaldehyde is the most popular and efficient of the various substances in use as disinfectants. But among people who have had to do with the practical problems of room and house disinfection the present methods, of either generating the gas or of liberating it from its water solution, fail to give anything like general satisfaction. Three methods of procuring the formaldehyde gas are at present in quite general use: i. e., the lamps which form formaldehyde by oxidation of methyl alcohol, generally through the agency of platinum black; the lamps which evaporate the solution of the gas in water, commercially known as "formalin;" and the "sheet method" as at present used in Chicago, where the solution of "formalin" is sprayed upon suspended sheets from which it evaporates and diffuses throughout the rooms.

The chief objection to all of these methods is that a very long period of time is required before all of the formaldehyde to be used is liberated in the space to be disinfected. This naturally allows a considerable quantity of the gas to escape by leakage, and also prevents the gas reaching its maximum density quickly. In the case of the synthesis of formaldehyde from methyl alcohol there is a very considerable loss of formaldehyde for disinfecting purposes by the further decomposition of the alcohol into carbon dioxide. The first two methods offer the additional objection of using fire in procuring the formaldehyde, thus necessitating bulky apparatus, and very constant attention to prevent the spreading of fire. The long and disagreeable process of spraying fails to commend the "sheet method" to the majority of practical workers. It has long been thought that, if we could



get an almost instant liberation of the total amount of formaldehyde either from alcohol or formalin, the time of exposure would be much reduced, and probably the amount of the gas required for thorough disinfection would also be much less. Preference has been given by most operators to the solution known as formalin since it carries with the formaldehyde gas a large amount of water, this latter being necessary in order to get the maximum destructive action from the formaldehyde. The work recorded below, which grew out of a chance suggestion, has been performed in an effort to remove from the path of the health officer these following difficulties: bulky apparatus to transport; the danger of fire from the use of an open flame; the necessity of supplying moisture from a source other than the gas generator; and the opportunity for great loss of formaldehyde through leakage. In other words, I have attempted to provide for a *very rapid* liberation of the gas, the source of the necessary heat coming, not from a flame, but from a chemical reaction. How near this has been attained the description given below, together with the bacteriological results will show.

The chemical work was performed during the spring of 1904 at my Laboratory at Saco, and the bacteriological work at Augusta during the summer of 1904. This last was in conjunction with Dr. J. P. Russell, State Bacteriologist, who reports upon it. Most of the chemical work has been qualitative though all that relates to the formaldehyde produced by the reaction has been quantitative as well. The actual figures of all the long series of tests will not be tabulated individually, nor will the methods of estimation be designated other than by name, as they are all methods familiar to chemists. No particular form of generator is presented for this reaction, as it has been found that any vessel large enough to hold the reagents when in action will give good results. The form of apparatus which has given the best results so far will be briefly spoken of in its proper place. With these words of introduction, I turn to the method of operation to be presented in these pages.

In December, 1903, Dr. Young called my attention to the fact that a mixture of potassium permanganate ( $\text{KMnO}_4$ ) and formalin is attended by the formation of considerable heat, and the liberation of a gas which seemed to be formaldehyde. He requested that I would look into the matter and see if this reac-

tion could be turned to practical account. The reaction has been known for a very long time, and has probably been often used by teachers of chemistry to illustrate the formation of an acid from an aldehyde by direct oxidation.

Theoretically formic acid ( $\text{CH}_2\text{O}_2$ ) is formed by the oxidation of formic aldehyde ( $\text{CH}_2\text{O}$ ), just as the latter results from the oxidation of methyl alcohol ( $\text{CH}_2\text{OH}$ ). This reaction can be brought about in a degree by adding to a solution of formaldehyde a substance which readily gives up all, or part of its oxygen, such as the dichromate or permanganate of potassium. In reality, in the presence of an excess of oxygen and heat the reaction proceeds a step farther, and involves the decomposition of the formic acid into water ( $\text{H}_2\text{O}$ ) and carbon dioxide ( $\text{CO}_2$ ). The amount of heat liberated by the oxidation of formaldehyde to formic acid is very great, and this large amount of heat is liberated, under proper conditions, in a very short space of time. When proper proportions of the reagents are used the amount of heat liberated is enough to cause the complete evaporation of the formaldehyde not oxidized. This amount of formaldehyde, which is evaporated, is by this process removed from the oxidizing action of the permanganate, and is thus available almost instantly, and in its maximum quantity for disinfecting purposes. The permanganate is itself reduced to a lower oxide of manganese, with the formation of potassium oxide, and liberation of oxygen. The reaction is very vigorous, and attended by great effervescence.

All the work, both chemical and bacteriological, has been performed using the ordinary commercial formalin supplied the State board of health for use in the Novy generators. The permanganate employed has been the fine needle-shaped crystals of commerce—not the large c. p. octohedral crystals. In the quantitative work the c. p. crystals were powdered before using them. All determinations of the amounts of formaldehyde were made by Romjin's potassium cyanide method, as experience showed that this method is capable of yielding better results than the iodine methods. All of the determinations were made in dilute solutions of formaldehyde, the standard solutions being N-10.

The first work was to determine the amounts of formalin and permanganate which would secure the greatest yield of the gas

in the shortest time. The results of a long series of experiments led me to adopt the proportion of 10cc of formalin to 3.75 gms. of permanganate, or approximately 6.5 ounces of permanganate to a pint of formalin. This was the proportion used in all laboratory work and in most of the bacteriological work, although a few tests using 4 gms. in place of 3.75 pointed to a slightly increased yield of formaldehyde. The bacteriological results using 3.75 gms. were, in every way, as satisfactory as the ones obtained from using 4 gms., so the first proportion was the one finally adopted.

The next question to engage attention was the method of bringing the reagents together in order to get the quickest and maximum yield of the gas. The results of my experiments led to adopting the very simple method of putting the permanganate into the generator, pouring the formalin upon it, and making as hasty an exit from the room as possible.

Experiments were tried where the permanganate was gradually fed into the measured amount of formalin; and also where the formalin was run into the weighed amounts of permanganate. In each case there was a smaller and slower yield of formaldehyde than in the method adopted, and the amount of permanganate required to complete the reaction was increased. This increase in the amount of permanganate required when it was fed into the formalin, was probably due to the fact that the small amounts of permanganate did not allow of sufficient oxidation of the formalin to liberate the amount of heat necessary to evaporate the solution. Also the increased length of time the reagents were in contact allowed for a greater oxidation of the formalin into formic acid, with a corresponding decrease in the amount of formaldehyde available for disinfecting purposes. It is also probable that the permanganate was to some extent decomposed as it fell into the generator through the gas arising from the latter, since a gas, at the instant of liberation is especially active.

The same difficulties in regard to diminished yield of formaldehyde, increased amount of permanganate, and slowness of action were encountered when the formalin was run upon the permanganate. The best results were always obtained by pouring the requisite amount of the formalin upon the corresponding quantity of permanganate.



Another factor affecting the quickness and quantity of the yield of the formaldehyde is the size of the permanganate crystals. In order to get as rapid and vigorous action as possible the permanganate must be in a powdered form, or in the long needle-shaped crystals which are usually met with in the commercial article. If the large c. p. octohedral crystals of permanganate are to be used they must first be powdered. The reason for using the fine or powdered crystals is of course, plain. Chemical action takes place between two substances only when they are in actual contact, and varies in intensity as the amount of surface which the substances present to each other. As a result, the greatest amount of chemical action, in a given time, will take place when the substances present the greatest amount of surface for mutual action. In the large crystals the action does not reach the material in the interior of the crystals until the surfaces have been eaten away. This necessarily increases the time required for the reaction, and involves loss of available permanganate, as the greater part of the material in a crystal is not on the surfaces, but in the interior. The greatest possible exposure of surface of the permanganate gives the highest and quickest yield of the gas. As a result the permanganate used should always be in a fine crystal or powdered form.

There is little to be said in regard to the kind of generator which has been used in this work, as any dish, with sides high enough to prevent the solutions boiling over, will answer the purpose. So far as our bacteriological results go, no preference is to be given to any particular form or of material for a generator. From a chemical point of view there is a slight difference between the yield of the gas from different shaped generators.

The reaction is so violent, and attended by so much frothing and effervescence that very tall dishes are necessary to prevent the materials from running out. In the actual generation of large quantities of the gas, glass is a very poor substance to use as a generator, since the sudden production of high temperatures on the bottom of the beaker only, combined with the poor conducting power of the glass, results in a too sudden strain within it, and the bottom breaks out. In addition, since glass conducts the heat so poorly, a considerable quantity of the gas coming in contact with the cool sides of the beaker, is converted



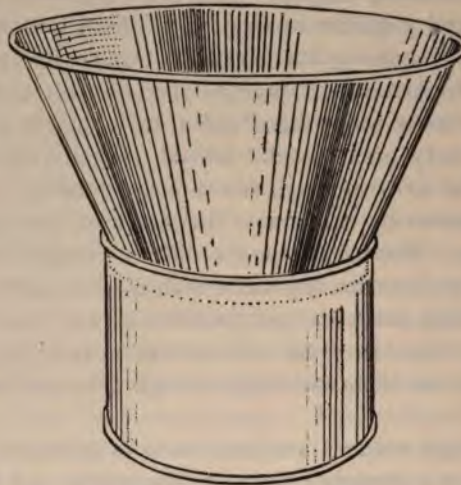
into the solid white para-formaldehyde ( $C_3H_6O_3$ ). This is deposited on the glass and so is lost for disinfecting purposes.

In the disinfecting experiments below mentioned, the generators were 3 and 5 gallon earthen jars—the 3 gallon jars being used in rooms requiring not over a pint and a half of formalin, used in the proportion of a quart to 1000 cu. feet, and the 5 gallon jars in rooms requiring from 1 to 2 quarts of formalin. These gave very good results indeed. There was very little polymerization to be noticed, but a large quantity of heat was lost by absorption by the jars. Tin jars were also used having straight sides. The use of the tin did not remove the tendency of the gas to polymerize any more than did the earthen jars, but in both of these cases the polymerization was less than when using glass. The loss from polymerization is in any case very slight, so that any dish with high enough sides can be used as a generator.

When straight walled jars were used to generate the gas in, this gas rose in a straight column to the ceiling and then spread out, working its way into the corners of the room from the ceiling down. In order that the gas might the quicker distribute itself throughout the room a trial was made with a generator whose top flared out like a funnel. Tests with this showed that, when the funnel shaped part of the apparatus was so near the bottom of the generator as to be partly filled when the reaction was in progress, the resulting gas rose in the form of an inverted cone, spreading out to all the upper parts of the room at once. Examination of the apparatus at the end of the operation showed no evidence of any polymerization whatever.

Acting on this hint a small generator has been constructed which is giving very good laboratory results. It consists of a bright tin dish, about 10 inches in diameter, and whose sides rise to a perpendicular height of 8 inches. These sides are wrapped with asbestos paper so as to retain all possible heat. Above the height mentioned the sides flare out like a funnel at an angle of about 50 or 55 degrees, and rise to a perpendicular height of 9 inches above their junction with the straight walls below. This funnel part of the apparatus can be made to detach from the bottom; and the latter can be packed into the former for transportation. Such an apparatus has a slight advantage over the

other forms, as it distributes the gas quicker, prevents polymerization, and loss of heat by radiation.



FORMALDEHYDE GENERATOR.

[The apparatus shown in this cut is not an essential, but is a convenience. The diameter of the lower part is 10 inches and its height 8 inches. The diameter of the funnel-shaped part is 17½ inches at the top, and the height of the whole apparatus is 15½ inches.]

A large number of experiments were made with the object of determining whether or not the reaction between the formalin and permanganate resulted in the formation of any products which would have an injurious effect on clothes, paper, or metals which would be left in a room to be disinfected. The results showed that there was no danger to be feared from this source. Analysis of the gas thrown out into a room by this reaction showed it to consist of formaldehyde, water vapor, carbon dioxide, a very small amount of formic acid, and a little oxygen. None of these compounds will have any effect on materials left in a room. In the generator were found a lower oxide of manganese, a little formaldehyde, carbon dioxide, potassium hydroxide, and, I think, a little potassium formate resulting from the neutralization of the potassium hydrate by formic acid.

It would be natural to suppose that a large amount of formic acid would be given off in the process of this reaction, but only a small amount is actually liberated. The reason that this state of affairs exists is that formic acid, in the presence of heat and

oxygen, is decomposed into water and carbon dioxide, and also because some of the acid is used up in neutralizing the potassium hydroxide formed at the same time by this reaction. These transformations of formic acid cannot be regarded as detrimental to the principal reaction, as they remove an undesirable compound and also add to the heat produced by the first reaction. The amount of moisture furnished by this secondary reaction is so small that it can be disregarded.

A series of quantitative experiments were undertaken to determine the amount of formaldehyde actually derived from the formalin, and available for disinfecting purposes. The results showed this amount to be quite constant, the yield of gas being, on an average, 81% of that in the original solution of formalin. The remaining 19% represents the fuel necessary to produce the heat to evaporate the 81% available for disinfecting. This figure—81%—represents the total yield of available gas. In actual work this total is not all furnished at once. Between 80 and 85% of the available gas is set free within 5 minutes from the time the reagents are put together. The remainder is given off in rapidly diminishing amount for 12 hours. In our tests in the rooms of an ordinary French tenement house, using no precautions to prevent leakage save to stop the key holes, the amount of the gas given off in this secondary stage just about offset the natural leakage during the first 3 hours. It acts almost as an automatic device for preserving the amount of gas in a room at its maximum density for the time necessary for thorough disinfection. Since it acts thus, this secondary reaction seems to me to be more in the nature of an advantage than of a disadvantage.

The results of this reaction may be briefly expressed by saying that the maximum amount of formaldehyde is liberated within 5 minutes of the beginning of the action, and the gas is kept at its maximum during the period necessary for disinfection, by this secondary reaction replacing the loss through natural leakage from the room. It may be in order for me to state at this point that a 3-hour exposure has been found just as fatal to bacterial life as an exposure of 16 hours. This is true in the case of both open and buried cultures.

Since potassium permanganate yields much more oxygen in the presence of sulfuric acid than without the addition of this reagent, it was at first decided to use it with the formalin. It

was thought that by its use a lesser quantity of permanganate would be required than without it. The results of my experiments seem to contradict this view, as there was a falling off in the amount of available formaldehyde, amounting to 5% and often more. Also there was a corresponding increase in the amount of the useless carbon dioxide. The reason for this probably is that oxygen is liberated faster than is necessary to produce the required degree of heat, thus forming more formic acid and leaving less formaldehyde for use, although increasing the useless carbon dioxide. The addition of the sulfuric acid also raises the boiling point of the solution, and thus necessitates more heat to cause evaporation.

I may sum up the results of this work in a few words: The oxidation of a little formaldehyde by permanganate results in the evaporation of 81% of the original weight of aldehyde within 5 minutes of the beginning of the reaction. The chemical reaction furnishes all the heat necessary to vaporize the formalin and its water of solution, doing away with all need of fire. The ordinary house can furnish all material necessary for a generator, while the reagents can be cheaply purchased at any drug store. The method of operation is so simple that anyone can attend to it who can tell the difference between a solid and a liquid, requiring only the pouring of the measured amount of formalin upon the corresponding quantity of permanganate. Absolutely no care is required after mixing the reagents, the reaction starting and dying out of itself.

I wish to make no large or unwarranted claims for the above method of procuring formaldehyde for disinfecting purposes. Neither is it put forward with any claims of originality of invention or research. It will stand for what it is worth, and that worth will be judged by its actual usefulness as a disinfectant. To determine this worth, Dr. Russell and myself have carried through a series of 1529 bacterial tests, which I may say have given results which will stand with any, both as concerns the destructive power of the gas, thus prepared, upon bacterial life, and as concerns the length of exposure necessary to destroy such life. I think that I may say that the idea that an instantaneous liberation of the total necessary amount of formaldehyde, would cut down the time of exposure, is proved.



Below, Dr. Russell reports upon our bacteriological work with formaldehyde obtained as above described.

H. D. EVANS, *Chemist, Laboratory of Hygiene.*

#### REPORT OF THE BACTERIOLOGIST.

In the work of testing the efficiency of formaldehyde gas as a disinfectant when liberated by a process which is new in the work of practical disinfection, an extended series of experiments have been made. In this work formaldehyde gas has been liberated by pouring the strong solution of formaldehyde upon potassium permanganate. Mr. H. D. Evans, the chemist of the Hygienic Laboratory, who has co-operated with me in this work has reported upon the preliminary chemical work which was required before the bacteriological tests were undertaken.

The tests have been made under widely varying climatic conditions, having extended from January to the late summer of 1904. They have been made in rooms which differ greatly as to location, size, finish, and tightness as regards windows, doors, cracks in the walls and ceilings, and the amount of exposure to sunlight. Some of the exposures were made in a suite of offices in Masonic Temple on Water street, and the rest in the different rooms in a tenement on Bridge street. This tenement is in the so-called "Bridge Street Block" which includes seven other tenements. The one used in these experiments is at the east end of the block. On the north which is the rear of the tenement there is a vacant lot, on the east a space of about five feet separates it from another dwelling house, on the south is the street on which the block fronts, and the next adjoining tenement of the block is on the west. The results of the exposure of many cultures I have attempted to arrange so that the effect upon them after different lengths of exposure and in different parts of the various rooms may easily be found.

The test organisms used were diphtheria bacillus, typhoid bacillus, *B. anthracis*, *B. subtilis*, some of which were old cultures, *S. pyogenes albus*, *S. pyogenes aureus*, *B. coli com.*, *B. pyocyaneus*, *M. tetragenus*, streptococci, and mixed cultures mostly derived from swabs which had been applied to throats supposed to be diphtheritic. These were exposed on pieces of

sterilized filter paper and pieces of ordinary writing paper which were put up on the wall or suspended from wires stretched across the rooms at various heights and at various distances from the walls.

As will be seen in the last column of the tabulation, some of the pieces of infected paper were exposed uncovered, while others were placed between layers of cotton flannel, ticking, or silk. The pieces of cloth were held tightly together at their edges by clamping outside of them pieces of tin in the centre of each of which was a hole three inches in diameter. The infected pieces of paper were so placed that they were in the center of that part of the cloth which was uncovered by the tin.

Plain bouillon and Loeffler's blood serum were used in making the cultures. Each lot of media was tested with the various kinds of bacteria and controls were also made by inoculating the tubes after they failed to show growth from the exposed cultures. All the cultures made from the exposed bacteria were kept in the incubator at least forty-eight hours at 37° C.

In tabulating the results the rooms are here designated by "R" followed by Roman numerals.

R. I. indicates the room which was numbered one and was on the first floor of the tenement house fronting the south. It has three windows, two on the south side and one on the east, a mantel on the north side of the room and one door. It had a volume of 1,521 cubic feet.

R. II. with a volume of 968 cubic feet is on the second floor of the tenement and has two windows looking to the north, a closet and one door.

R. III. is on the second floor of the tenement and faces the south. There are two windows on the south side, one on the east, and two doors, one opening into the hall and the other leading to the attic stairway. The size was 1,850 cubic feet.

R. IV. situated on the northeast corner of the second floor has one north window, one door, and a volume of 525 cubic feet.

R. V. is an office in Masonic Temple and has three windows, two doors, and a volume of about 1,000 cubic feet.

The doors and windows in all the rooms were unsealed except in the case of very wide cracks which were covered with adhesive plaster.

In the following tabulation of results the character of the test organisms used is shown in the first column. Each horizontal line indicates the results obtained with a series or group of cultures ranging in number from one to twenty-five as is shown in the column of totals in column number seven. The figures at the left of the first column are simply for facilitating reference to any particular group or series. Their number—the number of the series of cultures—is 279, but the total number exposed in these experiments is 1529.

The second column gives the time of exposure in hours. The third column indicates the temperature of the room at the beginning of the period of exposure; and the fourth column shows the humidity of the external atmosphere when the exposures were made.

An exhibit of the results is given in columns 5, 6, and 7, and the last column shows the particular room and the location in the room where each culture was exposed.

It was the aim in these experiments to have the conditions approach as nearly as possible those usually existing in the actual work of disinfection. The rooms, as has already been stated, varied in capacity from 525 to 1,850 cubic feet. The closeness of construction of some of the rooms at least was considerably inferior to that of the average room which the health officer is called upon to disinfect. The care exercised in closing cracks and crevices was probably less than that usually exercised, and no artificial methods were put into operation to secure a uniform diffusion of the gas.

TABULATION OF TESTS.

	Time of exposure in hours.	Temperature.	Humidity.	RESULTS.			Where exposed.
				growth.	No growth.	Total.	
1 Diphtheria.....	16	75	70	0	4	4	R. I. Over window and door.
2 Mixed.....	16	75	70	0	5	5	R. I. On mantel.
3 Mixed.....	16	75	70	0	5	5	R. I. West base-board.
4 Mixed.....	16	75	70	0	2	2	R. I. N. W. base-board.
5 Mixed.....	16	75	70	0	2	2	R. I. N. E. base-board.
6 Mixed.....	16	75	70	0	2	2	R. I. West floor.
7 Mixed.....	16	75	70	0	1	1	R. I. N. W. floor.
8 Mixed.....	16	75	70	0	8	8	R. I. East window.
9 Mixed.....	16	75	70	0	1	1	R. II. Over door.
10 Mixed.....	16	75	70	0	1	1	R. II. Over closet door.
11 Mixed.....	16	75	70	0	1	1	R. II. Floor.
12 Diphtheria.....	16	75	70	0	3	3	R. II. N. W. window.
13 Typhoid.....	16	75	70	0	3	3	R. II. N. E. window.
14 Mixed.....	16	75	70	0	3	3	R. II. N. W. base-board and floor.
15 Subtilis.....	16	75	70	0	3	3	R. II. East base-board.
16 Subtilis.....	16	75	70	0	3	3	R. II. East floor.
17 Subtilis.....	16	75	70	0	2	2	R. II. South base-board.
18 Diphtheria.....	16	75	70	0	4	4	R. II. Closet door.
19 Subtilis.....	16	75	70	0	3	3	R. II. In closet.
20 Typhoid.....	15	70	69	0	5	5	R. III. N. W. base-board.
21 Diphtheria.....	15	70	69	0	5	5	R. III. N. E. base-board.
22 Diphtheria.....	15	70	69	0	5	5	R. III. Mantel.
23 Mixed.....	15	70	69	0	5	5	R. III. E. base-board
24 Typhoid.....	15	70	69	0	5	5	R. III. S. W. window.
25 Mixed.....	15	70	69	0	5	5	R. III. Floor by door.
26 Mixed.....	15	70	69	3*	2	5	R. IV. Window.
27 Typhoid.....	15	70	69	0	5	5	R. IV. N. E. corner base-board.
28 Diphtheria.....	15	70	69	0	5	5	R. IV. S. W. corner floor.
29 Diphtheria.....	15	70	69	0	5	5	R. IV. East floor.
30 Typhoid.....	15	70	69	0	5	5	R. IV. Window; upper sash.



31 Typhoid.....	15	70	69	0	1	1	R. IV. N. W. floor.
32 Abus.....	12	72	.....	0	5	5	R. V. Door.
33 Aureus.....	12	72	.....	0	5	5	R. V. Door.
34 Colon.....	12	72	.....	0	5	5	R. V. Door.
35 Subtilis.....	12	72	.....	0	5	5	R. V. Door.
36 Colon.....	12	72	.....	0	5	5	R. V. Window between 2 layers of cotton.
37 Aureus.....	12	72	.....	0	5	5	R. V. Window between 2 layers of cotton.
38 Diphtheria.....	12	72	.....	0	1	1	R. V. Floor between 2 layers of cotton.
39 Diphtheria.....	12	72	.....	0	5	5	R. V. Door.
40 Aureus.....	12	74	.....	0	5	5	R. V. Door.
41 Pyocyaneus.....	12	74	.....	0	5	5	R. V. Door.
42 Abus.....	12	74	.....	0	5	5	R. V. Door.
43 Diphtheria.....	12	74	.....	0	5	5	R. V. S. E. floor between 4 layers of flannel.
44 Aureus.....	12	74	.....	0	5	5	R. V. S. W. corner between 4 layers of flannel.
45 Diphtheria.....	12	74	.....	0	5	5	R. V. Between 4 layers of flannel.
46 Typhoid.....	12	80	.....	0	5	5	R. V. Door.
47 Mixed.....	12	80	.....	0	8	8	R. V. Door.
48 Colon.....	6	68	.....	0	10	10	R. V. Door.
49 Pyocyaneus.....	6	68	.....	0	10	10	R. V. Door.
50 Subtilis.....	6	68	.....	0	10	10	R. V. Door.
51 Diphtheria.....	6	68	.....	0	10	10	R. V. Door.
52 Typhoid.....	53	72	.....	0	15	15	R. V. Door.
53 Colon.....	53	78	53-53	0	5	5	R. IV. Four feet high. West wall.
54 Colon.....	53	78	53-53	0	5	5	R. IV. Floor. N. W. corner.
55 Subtilis. Old.....	53	78	53-53	1	4	4	R. IV. Window.
56 Subtilis.....	53	78	53-53	1	4	4	R. IV. North wall. Five feet high.
57 Aureus.....	53	78	53-53	0	5	5	R. IV. N. E. corner floor.
58 Typhoid.....	53	78	53-53	0	5	5	R. IV. East wall. Eight feet.
59 Diphtheria.....	53	78	53-53	0	5	5	R. IV. S. E. corner. Seven feet.
60 Colon.....	53	78	53-53	0	5	5	R. III. Four feet. Mantel.
61 Subtilis.....	53	78	53-53	0	5	5	R. III. North wall. Six and one-half feet high.
62 Diphtheria.....	53	78	53-53	0	5	5	R. III. East wall. Seven feet.
63 Colon.....	53	78	53-53	0	5	5	R. III. S. E. corner. Seven feet.
64 Typhoid.....	53	78	53-53	0	5	5	R. III. South wall. Eight feet.
65 Aureus.....	53	78	53-53	0	5	5	R. III. Attic door. Seven feet.
66 Subtilis.....	53	78	53-53	0	5	5	R. III. West wall. Two feet.
67 Diphtheria.....	53	78	53-53	1	4	4	R. II. West wall. Five feet.
68 Typhoid.....	53	78	53-53	0	5	5	R. II. Floor. North west.
69 Subtilis.....	53	78	53-53	3	2	2	R. II. North wall. Four feet.
70 Colon.....	53	78	53-53	0	5	5	R. II. N. E. corner. Eight feet.
71 Subtilis.....	53	78	53-53	0	5	5	R. II. East wall. Two feet.
72 Typhoid.....	53	78	53-53	0	5	5	R. II. South wall. Five feet.
73 Aureus.....	53	78	53-53	0	5	5	R. II. Closet door. Eight feet.
74 Diphtheria.....	53	78	53-53	0	5	5	R. I. West wall. Six feet.

TABULATION OF TESTS—Continued.

	Time of exposure in hours.	Temperature.	Humidity.	RESULTS.			Where exposed.
				Growth.	Growth.	Total.	
75 Colon.....	75	55-63		0	0	0	R. I. N. W. corner. Five feet.
76 Typhoid.....	75	55-63		0	0	0	R. I. Mantel.
77 Diphtheria.....	75	55-63		0	0	0	R. I. North wall. Three feet.
78 Subtilis. New.....	75	55-63		0	0	0	R. I. N. E. wall. Eight feet.
79 Subtilis. Old.....	75	55-63		0	0	0	R. I. East window. Seven feet.
80 Aureus.....	75	55-63		0	0	0	R. I. East wall. Eight feet.
81 Typhoid.....	75	55-63		0	0	0	R. I. South wall. Eight feet.
82 Typhoid.....	80	77		0	0	0	R. II. N. W. floor.
83 Albus.....	80	77		0	0	0	R. II. N. E. window.
84 Diphtheria.....	80	77		0	0	0	R. II. South.
85 Diphtheria.....	80	70		0	0	0	R. II. Closet.
86 Typhoid.....	80	70		0	0	0	R. II. S. W. corner floor.
87 Albus.....	80	70		0	0	0	R. II. Closet door.
88 Albus.....	80	70		0	0	0	R. II. Door. One-half up.
89 Diphtheria.....	80	70		0	0	0	R. I. Mantel.
90 Typhoid.....	80	70		0	0	0	R. I. N. W. corner.
91 Diphtheria.....	80	70		0	0	0	R. I. East window.
92 Typhoid.....	80	70		0	0	0	R. I. S. E. window.
93 Albus.....	80	70		0	0	0	R. I. Floor by door.
94 Colon.....	77	61		0	0	0	R. II. West wall. Five feet.
95 Aureus.....	77	61		0	0	0	R. II. North wall. Four feet.
96 Throat.....	77	61		0	0	0	R. II. N. E. corner. Eight feet.
97 Diphtheria.....	77	61		0	0	0	R. II. East wall. Two feet.
98 Mixed.....	77	61		0	0	0	R. II. South wall. Five feet.
99 Subtilis. Old.....	77	61		0	0	0	R. II. Corner floor, closet.
100 Subtilis.....	77	61		4	0	4	R. II. Closet door, closet.
101 Mixed.....	77	61		0	0	0	R. IV. S. W. corner floor.
102 Diphtheria.....	77	61		0	0	0	R. IV. North wall. Four feet.
103 Throat.....	77	61		0	0	0	R. IV. Window.
104 Subtilis. New.....	77	61		5	0	5	R. IV. North wall. Five feet.

105	Subtills.	Old	77	61	0	5	5	R. IV.	N. E. corner floor.
43	106	Aureus	77	61	0	5	5	R. IV.	East wall. Eight feet.
43	107	Colon	77	61	0	5	5	R. IV.	S. E. corner. Seven feet.
43	108	Subtills	77	61	0	5	5	R. III.	Mantel.
43	109	Diphtheria	77	61	0	5	5	R. III.	North wall.
43	110	Aureus	77	61	0	5	5	R. III.	East window. Seven feet.
43	111	Mixed	77	61	0	5	5	R. III.	S. E. corner. Six feet.
43	112	Colon	77	61	0	5	5	R. III.	South wall. Eight feet.
43	113	Throat	77	61	0	5	5	R. III.	Attic door. seven feet.
43	114	Subtills	77	61	0	5	5	R. III.	West wall. Two feet.
43	115	Colon	77	61	0	5	5	R. I.	West wall. Six feet.
43	116	Subtills	77	61	0	5	5	R. I.	Mantel.
43	117	Subtills	77	61	0	5	5	R. I.	North wall. Three feet.
43	118	Aureus	77	61	0	5	5	R. I.	N. E. wall. Eight feet.
43	119	Diphtheria	77	61	0	5	5	R. I.	East floor.
43	120	Mixed	77	61	0	5	5	R. I.	South wall. Seven feet.
43	121	Throat	77	61	0	5	5	R. I.	S. W. corner floor.
43	122	Typhoid	77	61	0	5	5	R. IV.	Door. Four feet.
43	123	Albus	72	76	0	5	5	R. IV.	West wall. Four feet.
43	124	Subtills	72	76	0	5	5	R. IV.	N. W. corner floor.
43	125	Procyaneus	73	76	0	5	5	R. IV.	North wall. Four feet.
43	126	Throat	73	76	0	5	5	R. IV.	Middle floor.
43	127	Tetragenus	73	76	0	5	5	R. IV.	East wall. Three feet.
43	128	Subtills	72	76	0	5	5	R. IV.	S. E. corner. Eight feet
43	129	Colon	72	76	0	5	5	R. IV.	South floor.
43	130	Throat	73	76	0	5	5	R. III.	Mantel.
43	131	Subtills	73	76	0	5	5	R. III.	S. E. corner floor.
43	132	Tetragenus	73	76	0	5	5	R. III.	S. E. corner. Eight feet
43	133	Colon	72	76	0	5	5	R. III.	South wall.
43	134	Albus	72	76	0	5	5	R. III.	Attic floor. Eight feet.
43	135	Subtills	72	76	0	5	5	R. III.	West wall. Two feet.
43	136	Typhoid	72	76	0	5	5	R. III.	West wall. Two feet.
43	137	Subtills	72	76	0	5	5	R. III.	N. W. corner floor.
43	138	Subtills	72	76	0	5	5	R. II.	West floor.
43	139	Colon	72	76	0	5	5	R. II.	Middle floor.
43	140	Throat	72	76	0	5	5	R. II.	N. E. window. Six feet.
43	141	Procyaneus	72	76	0	5	5	R. II.	N. E. wall. Seven feet.
43	142	Tetragenus	72	76	0	5	5	R. II.	East wall. Two feet.
43	143	Albus	72	76	0	5	5	R. II.	South wall. Five feet.
43	144	Typhoid	72	76	0	5	5	R. II.	South wall. Eight feet.
43	145	Albus	72	76	0	5	5	R. II.	Closet door. Seven feet.
43	146	Tetragenus	72	76	0	5	5	R. I.	West wall. Six feet.
43	147	Colon	72	76	0	5	5	R. I.	N. W. corner. Six feet.
43	148	Procyaneus	72	76	0	5	5	R. I.	Mantel.
43	149	Colon	72	76	0	5	5	R. I.	North wall. Two feet.

TABULATION OF TESTS—Continued.

	Time of exposure in hours.	Temperature.	Humidity.	RESULTS.			Where exposed.
				W Growth.	No Growth.	Total.	
149 Typhoid.....	4	73	76	0	5	5	R. I. North wall. Eight feet.
150 Subtilis.....	4	73	76	0	5	5	R. I. East wall. Eight feet.
151 Subtilis.....	4	73	76	0	5	5	R. I. South floor.
152 Throat.....	4	73	76	0	5	5	R. I. S. W. window. Seven feet.
153 Procyaneus.....	4	72	76	0	5	5	R. IV. Door. Four feet.
154 Subtilis.....	4	73	76	0	5	5	R. IV. Window. Four feet.
155 Albus.....	4	75	76	0	5	5	R. IV. North floor. Five feet.
156 Aureus.....	4	75	76	0	5	5	R. IV. N. E. corner. Eight feet.
157 Diptheria.....	4	78	76	0	5	5	R. IV. East wall. Four feet.
158 Diptheria.....	4	78	76	0	5	5	R. IV. S. E. corner floor.
159 Typhoid.....	4	78	76	0	5	5	R. IV. South wall. Five feet.
160 Subtilis.....	4	78	76	0	5	5	R. IV. West wall. Five feet.
161 Albus.....	4	74	76	0	5	5	R. IV. N. W. corner floor. Four feet.
162 Diptheria.....	4	74	76	0	5	5	R. IV. N. E. corner floor. Four feet.
163 Aureus.....	4	78	76	0	5	5	R. IV. N. E. corner floor.
164 Diptheria.....	4	78	76	0	5	5	R. IV. East wall. Five feet.
165 Albus.....	4	78	76	0	5	5	R. IV. Middle of floor.
166 Typhoid.....	4	78	76	0	5	5	R. IV. S. E. wall. Eight feet.
167 Aureus.....	4	78	76	0	5	5	R. IV. West wall. Six feet.
168 Subtilis.....	4	78	76	0	5	5	R. I. N. W. corner floor.
169 Subtilis.....	3 1/2	78	76	0	5	5	R. I. Mantel.
170 Albus.....	3 1/2	78	76	0	5	5	R. I. N. E. corner. Six feet.
171 Aureus.....	3 1/2	78	76	0	5	5	R. I. East window. Four feet.
172 Diptheria.....	3 1/2	78	76	0	5	5	R. I. East wall. Four feet.
173 Aureus.....	3 1/2	78	76	0	5	5	R. I. Mantel.
174 Typhoid.....	3 1/2	78	76	0	5	5	R. I. Walls and window.
175 Typhoid.....	4	78	76	0	5	5	R. I. In closed box on floor.
176 Typhoid.....	4	78	76	0	5	5	
177 Diptheria.....	4	78	76	0	5	5	
178 Diptheria.....	4	78	76	0	5	5	



179 Typhoid.....	4	78	55	0	10	10	R. I.	West wall. Six feet. Between two layers ticking.
180 Typhoid.....	4	78	55	0	10	10	R. I.	N. W. corner door between two layers ticking.
181 Typhoid.....	4	78	55	0	10	5	R. I.	West wall between four layers ticking.
182 Typhoid.....	4	78	55	0	15	5	R. I.	N. W. corner door between four layers ticking.
183 Typhoid.....	4	78	55	0	10	5	R. I.	N. W. corner between six layers ticking.
184 Diphtheria.....	4	78	55	0	10	10	R. I.	N. W. wall. Eight feet. Between two layers ticking.
185 Diphtheria.....	4	78	55	0	10	5	R. I.	N. W. wall. Eight feet. Between four layers ticking.
186 Diphtheria.....	4	78	55	0	10	10	R. I.	S. E. corner floor between two layers ticking.
187 Diphtheria.....	4	78	55	0	10	10	R. I.	S. E. corner floor between four layers ticking.
188 Diphtheria.....	4	78	55	0	10	5	R. I.	S. W. corner floor between six layers ticking.
189 Diphtheria.....	4	78	55	0	10	10	R. I.	Mantel, two layers cotton flannel.
190 Diphtheria.....	4	78	55	0	10	5	R. I.	Mantel, four layers cotton flannel.
191 Diphtheria.....	4	78	55	0	10	10	R. I.	East window, two layers cotton flannel.
192 Diphtheria.....	4	78	55	0	15	10	R. I.	East window, four layers cotton flannel.
193 Typhoid.....	4	78	55	0	20	20	R. I.	Floor, two layers cotton flannel.
194 Typhoid.....	4	78	55	0	10	15	R. I.	Floor, four layers cotton flannel.
195 Typhoid.....	4	78	55	0	10	5	R. I.	Floor, six layers cotton flannel.
196 Anthrax.....	4	78	55	0	5	5	R. I.	Mantel.
197 Anthrax.....	4	78	55	0	5	5	R. I.	Floor.
198 Subtilis.....	4	78	55	0	5	5	R. I.	West wall. Six feet. Six layers cotton flannel.
199 Subtilis.....	4	78	55	1	4	5	R. I.	Under mantel, four layers flannel.
200 Mixed.....	4	78	55	0	5	5	R. I.	N. E. wall. Six feet. Six layers flannel.
201 Subtilis.....	4	78	55	0	5	5	R. I.	N. E. corner, four layers flannel.
202 Mixed.....	4	78	55	0	5	5	R. I.	East window, four feet. Six layers flannel.
203 Mixed.....	4	78	55	0	5	5	R. I.	East wall. Eight feet. Six layers flannel.
204 Typhoid.....	4	78	55	0	5	5	R. I.	S. E. corner floor, six layers flannel.
205 Typhoid.....	4	78	55	0	5	5	R. I.	S. E. window top, six layers flannel.
206 Typhoid.....	4	78	55	0	5	5	R. I.	South floor, seven feet. Six layers flannel.
207 Typhoid.....	4	78	55	0	5	5	R. I.	South floor between eight layers flannel.
208 Colon.....	4	78	55	0	5	5	R. I.	South wall. Four feet. Six layers cotton flannel.
209 Colon.....	4	78	55	0	5	5	R. I.	S. W. window, six layers cotton flannel.
210 Subtilis, Old.....	4	78	55	4	1	5	R. I.	Middle floor, six layers flannel.
211 Typhoid.....	4	78	55	0	5	5	R. I.	Middle floor, eight layers flannel.
212 Colon.....	4	78	55	0	5	5	R. I.	West floor, six layers ticking.
213 Colon.....	4	78	55	0	5	5	R. I.	Mantel, six layers ticking.
214 Typhoid.....	4	78	55	0	5	5	R. I.	N. W. corner. Seven feet. Six layers ticking.
215 Typhoid.....	4	78	55	0	5	5	R. I.	North wall. Three feet. Six layers ticking.
216 Typhoid.....	4	78	55	0	5	5	R. I.	North wall. Eight feet. Six layers ticking.
217 Diphtheria.....	4	78	55	0	5	5	R. I.	N. E. floor, six layers ticking.
218 Colon.....	4	78	55	0	5	5	R. I.	Middle of floor, six layers ticking.
219 Colon.....	4	78	55	0	5	5	R. I.	Mantle, six layers cotton flannel.
220 Diphtheria.....	4	80	68	0	5	5	R. III.	North wall. Three feet. Six layers flannel.
221 Diphtheria.....	4	80	68	0	5	5	R. III.	North wall. Seven feet. Six layers flannel.
222 Diphtheria.....	4	80	68	0	5	5	R. III.	Top east window, six layers flannel.

TABULATION OF TESTS—Concluded.

	Time of exposure in hours.	Temperature.	Humidity.	RESULTS.			Where exposed.
				No growth.	No growth.	Total.	
223 Diphtheria.....	4	80	68	0	5	5	R. III. Middle east window. Six layers flannel.
224 Diphtheria.....	4	80	68	0	5	5	R. III. S. E. corner. Seven feet. Six layers flannel.
225 Mixed.....	4	80	68	0	5	5	R. III. S. E. window. Seven feet. Six layers flannel.
226 Colon.....	4	80	68	0	5	5	R. III. S. W. window. Four feet. Six layers flannel.
227 Typhoid.....	4	80	68	0	5	5	R. III. North floor, six layers flannel.
228 Typhoid.....	4	80	68	0	10	10	R. III. Floor, eight layers flannel.
229 Mixed.....	4	80	68	0	5	5	R. III. Mantel, six layers flannel.
230 Diphtheria.....	4	80	68	0	10	10	R. III. Corners of floor, six layers ticking.
231 Colon.....	4	80	68	0	5	5	R. III. South floor, six layers ticking.
232 Diphtheria.....	4	80	68	0	15	15	R. III. Attic floor, six layers ticking.
233 Mixed.....	4	80	68	0	5	5	R. III. Wall. Two feet. Six layers ticking.
234 Colon.....	4	80	68	0	5	5	R. III. West floor, six layers ticking.
235 Typhoid.....	18	78	78	0	5	5	R. I. S. E. corner floor.
236 Typhoid.....	18	78	78	0	5	5	R. I. South wall. Ten feet.
237 Colon.....	8	78	55	0	5	5	R. II. N. W. corner, eight layers ticking.
238 Typhoid.....	8	78	55	0	5	5	R. II. West wall. Four feet. Six layers ticking.
239 Typhoid.....	8	78	55	0	5	5	R. II. N. W. window, eight layers ticking.
240 Streptococci.....	8	78	55	0	5	5	R. II. N. W. wall. Five feet. Six layers ticking.
241 Diphtheria.....	3	78	55	0	10	10	R. II. Wall, six layers ticking.
242 Streptococci.....	3	78	55	0	5	5	R. II. Corners, six layers ticking.
243 Streptococci.....	3	78	55	0	10	10	R. II. Closet. Six feet. Six layers ticking.
244 Typhoid.....	3	78	55	0	5	5	R. II. N. W. corner, six layers flannel.
245 Diphtheria.....	3	78	55	0	5	5	R. II. Top door, six layers flannel.
246 Diphtheria.....	3	78	55	0	10	10	R. II. Windows, six layers flannel.
247 Streptococci.....	3	78	55	0	5	5	R. II. North wall. Four feet. Six layers flannel.
248 Typhoid.....	3	78	55	0	5	5	R. II. N. E. wall. Eight feet. Six layers flannel.
249 Diphtheria.....	3	78	55	0	5	5	R. II. N. E. corner floor, six layers flannel.
250 Typhoid.....	3	78	55	0	5	5	R. II. East wall. Four feet. Six layers flannel.
251 Diphtheria.....	3	78	55	0	5	5	R. II. S. W. floor, six layers flannel.
252 Colon.....	3	78	55	0	10	10	R. II. Floor, eight layers flannel.

233	Diphtheria.....	3	76	55	0	5	5	R. IV.	Closest door, six layers flannel.
234	Typhoid.....	3	67	55	0	5	5	R. IV.	Door between six layers silk.
235	Typhoid.....	3	67	55	0	5	5	R. IV.	Window between six layers silk.
236	Typhoid.....	3	67	55	0	5	5	R. IV.	North wall. Four feet. Six layers silk.
237	Typhoid.....	3	67	55	0	5	5	R. IV.	N. E. corner floor, six layers silk.
238	Typhoid.....	3	67	55	0	5	5	R. IV.	S. E. corner. Eight feet. Six layers silk.
239	Typhoid.....	3	67	55	0	5	5	R. IV.	West wall. Four feet. Six layers silk.
240	Colon.....	3	67	55	0	5	5	R. IV.	North floor. Four feet. Six layers ticking.
241	Mixed.....	3	67	55	0	5	5	R. IV.	North floor. Six layers ticking.
242	Colon.....	3	67	55	0	5	5	R. IV.	N. E. corner, six layers ticking.
243	Mixed.....	3	67	55	0	5	5	R. IV.	East wall. Six feet. Six layers ticking.
244	Typhoid.....	3	67	55	0	5	5	R. IV.	East floor. Six layers ticking.
245	Mixed.....	3	67	55	0	5	5	R. IV.	Middle floor, six layers ticking.
246	Colon.....	3	67	55	0	5	5	R. IV.	Door. Seven feet. Six layers flannel.
247	Mixed.....	3	67	55	0	5	5	R. IV.	S. W. corner floor, six layers flannel.
248	Diphtheria.....	3	67	55	0	5	5	R. IV.	West wall. Six feet. Six layers flannel.
249	Mixed.....	3	67	55	0	5	5	R. IV.	N. W. wall. Six feet. Six layers flannel.
250	Mixed.....	3	67	55	0	5	5	R. IV.	N. W. corner. Seven feet. Six layers flannel.
251	Diphtheria.....	3	67	55	0	5	5	R. IV.	Window, six layers flannel.
252	Diphtheria.....	3	67	55	0	5	5	R. IV.	Middle floor, eight layers flannel.
253	Diphtheria.....	3	67	55	0	5	5	R. IV.	Corner, six layers flannel.
254	Typhoid.....	3	67	55	0	5	5	R. IV.	N. E. corner. Seven feet. Six layers flannel.
255	Typhoid.....	3	67	55	0	5	5	R. IV.	East wall, six layers flannel.
256	Typhoid.....	3	67	55	0	5	5	R. IV.	S. E. corner floor, eight layers flannel.
257	Typhoid.....	3	67	55	0	5	5	R. IV.	South wall. Five feet. Six layers flannel.
258	Typhoid.....	3	67	55	0	5	5	R. IV.	South floor, six layers flannel.
259	Colon.....	3	67	55	0	5	5	R. IV.	Over door. Eight feet. Six layers flannel.
260	Diphtheria.....	3	67	55	0	5	5	R. IV.	

\* Near a wide crack in window.

The second column in the preceding tabulation shows that the work began with an exposure of 16 hours and this time was gradually reduced to three hours with no diminution of effectiveness.

An examination of the "results" columns will show that among the 1529 test objects exposed, growth developed from only 27 of them after incubation. In series No. 26 it may be noticed that positive results, that is, a growth, was obtained in three of the five tubes in this series. The place of exposure had been near a wide crack in the window. Again in Nos. 55 and 56, with the exceedingly resistant hay bacillus as the test organism, and the time of exposure  $5\frac{1}{2}$  hours, there was growth in one tube out of each group of five. In series No. 67, after incubation, there was growth in one tube, not of diphtheria bacillus, but presumably from faulty handling. In No. 69, three out of the five cultures from subtilis retained their power of growth after five and three-fourths hours' exposure. Subtilis again retained its vitality in Nos. 100 and 104, four cultures out of five in the former and five out of five in the latter giving a growth after  $4\frac{1}{4}$  hours exposure. No. 104 was in the same position as No. 26, near the wide crack by the window.

In No. 110 aureus exposed near the not tightly fitting window showed a growth in two out of five cultures. In No. 124 subtilis, 2 out of 5, again survived an exposure of 4 hours.

Subtilis, 5 out of 10 cultures from Nos. 198 and 210, gave a growth after 4 hours exposure, but in both these series it was protected by three thicknesses of cotton flannel.

Of the 27 test objects which were not sterilized, 21 were subtilis, 3 were mixed, 2 were aureus, and 1 was an accidental growth in a tube in which the diphtheria bacilli were all destroyed. The result, therefore, is that, in all these tests, none of the ordinary pathogenic bacteria survived.

In the last column it may be seen that to No. 179 most, but not all, of the series exposed to the action of formaldehyde were uncovered. From No. 179 on, nearly all were covered on both sides with from 1 to 4 layers of flannel or other cloth, and even then, with the time of exposure reduced to only 3 or 4 hours, there was no diminution in the death-rate of the exposed bacteria. These experiments seem to indicate that formaldehyde



liberated by this process and in the quantity here used, has considerable power of penetration.

Three hours' exposure may probably be considered a satisfactory minimum of time. In the future it is hoped to do some work in the line of determining whether the quantity of formaldehyde per 1,000 cubic feet of space may be lessened without at the same time lessening the penetrative power of the formaldehyde and the general efficiency of this process.

J. P. RUSSELL, *Bacteriologist.*

## REPORT OF THE STATE BOARD OF EMBALMING EXAMINERS.

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Complying with the requirements of Chapter 18, Section 17, the following report for the year 1903 is made to the State Board of Health:

The first meeting of the board of examiners was held May 27, 1903. This meeting was held at the State House, Wednesday, May 27, 1903. It was called to order by A. G. Young, who by the provisions of the act establishing the board is made clerk. A statement from the Secretary of State relating to the duration of the term of office of each member of the board is as follows:

M. C. Wedgwood appointed for 1 year.

Frank Redington       "       "   2 years.

Ralph B. White       "       "   3 years.

All the above named members being present and having qualified, Frank Redington was unanimously elected chairman of the board.

It was moved by Dr. Wedgwood and voted that the board of health be asked to adopt the rules and regulations lately recommended by the committees chosen by the Conference of State and Provincial Boards of Health, American Baggage Agents, and the National Funeral Directors' Association, in Chicago, April 15.

It was voted to adopt as the rule of the board that any person who fails successfully to pass the examination as a licensed embalmer shall be entitled to a subsequent examination at any meeting held for the purpose of examining candidates, but that the fee of five dollars shall be required for each examination.

It was the opinion of the board that undertakers' assistants cannot legally be registered. It was deemed desirable to get as accurate information as possible of the status of each person who makes application for registration so that persons not legally

entitled to registration may not be registered. It was also the opinion that registration and license are applicable to undertakers who live in the State of New Hampshire, or in the Province of Quebec, or New Brunswick, and who do business in the State of Maine, and shall be required of them.

The clerk of the board was instructed to prepare forms for the applications of persons who wish to become registered or licensed embalmers, and also forms of certificates to be issued to registered and licensed embalmers, and to submit these forms to the members of the board for approval.

It was deemed best not to hold meetings for the examination of applicants as licensed embalmers until after Sept. 1. The certificates, however, of registration may be prepared by the clerk, and he may obtain the signatures of the other members of the board, but they are not to be issued until the next meeting of the board.

It was voted that the next meeting of the board be called by the chairman and the secretary at such time as may be found desirable and convenient to the other members. It was voted to adjourn.

Meetings were held for the purpose of examining candidates August 26, September 23, November 10, and November 17. At the first of these meetings, that of August 26, the following instructions were formulated and given to the candidates at this meeting and at subsequent meetings:

"A list of questions is herewith submitted to you numbered from 1 to 40.

"The answers are to be made in writing, the figure to be placed before each answer which corresponds to that before its respective question.

"Two hours will be given within which time the answers to the questions will be handed in.

"The answers may be handed in any time within the two hours when completed, but the candidate when handing in his answers must immediately retire and not re-enter the room.

"Any candidate leaving the room before his answers have been completed and handed in will not be allowed to return, nor to finish his examination this day.

"Talk in the room or communications of any kind between candidates will debar from completion of the examination.

"Satisfactory answers to at least 30 of the questions (75 per cent.) will be required.

"No catch questions are submitted, only those which every practical undertaker should be able to answer.

"In any answers to questions relating to contagious and infectious diseases, no distinction between the two will be required. They will be considered simply in the sense of dangerous communicable diseases.

"Each candidate must place his signature to his examination paper."

The following is a list of the persons who passed successful examinations at these meetings and received the certificate which is given to licensed embalmers. The dates indicate the meeting at which the several persons received their examinations.

Name.	Residence.	Appointment.
Fred P. Adams .....	Farmington, Me. ....	August 26, 1903
H. E. Bates .....	Augusta, Me. ....	August 26, 1903
A. C. Bradbury .....	Newport, Me. ....	August 26, 1903
John M. Clark .....	Bath, Me. ....	August 26, 1903
Fred S. Curtis .....	Bath, Me. ....	August 26, 1903
Bryce K. Edwards .....	Madison, Me. ....	August 26, 1903
Thomas J. Finnigan .....	Bangor, Me. ....	August 26, 1903
J. Clark Flagg .....	Richmond, Me. ....	August 26, 1903
Curtis R. Foster .....	Ellsworth, Me. ....	August 26, 1903
William E. Gordon .....	Brunswick, Me. ....	August 26, 1903
Walter Graham Hay .....	Portland, Me. ....	August 26, 1903
E. E. Hussey .....	Brewer, Me. ....	August 26, 1903
Charles A. Lawry .....	Fairfield, Me. ....	August 26, 1903
J. Smith Nutting .....	Skowhegan, Me. ....	August 26, 1903
George M. Phoenix .....	Alfred, Me. ....	August 26, 1903
Albert S. Plummer .....	Lewiston, Me. ....	August 26, 1903
W. G. Preble .....	Gardiner, Me. ....	August 26, 1903
Charles A. Redington .....	Waterville, Me. ....	August 26, 1903
Frank Redington .....	Waterville, Me. ....	August 26, 1903
Edwin P. Sampson .....	Lewiston, Me. ....	August 26, 1903
Willard H. Stetson .....	Brunswick, Me. ....	August 26, 1903
Howard A. Teague .....	Lewiston, Me. ....	August 26, 1903
Irving C. Trufant .....	Bath, Me. ....	August 26, 1903
Ralph B. White .....	Bangor, Me. ....	August 26, 1903
Charles F. Ayer .....	Waterville, Me. ....	September 23, 1903
H. M. Barrett .....	Weld, Me. ....	September 23, 1903
E. N. Bucknam .....	Yarmouth, Me. ....	September 23, 1903
Edgar A. Burpee .....	Rockland, Me. ....	September 23, 1903
C. F. Chandler .....	Phillips, Me. ....	September 23, 1903
F. A. Davis .....	Farmington, Me. ....	September 23, 1903
C. M. Drew .....	Guilford, Me. ....	September 23, 1903
Michael J. Finnigan .....	Bangor, Me. ....	September 23, 1903
Roy Furnel .....	Wilton, Me. ....	September 23, 1903
Frank W. Halpen .....	Augusta, Me. ....	September 23, 1903
Oliver W. Ham .....	Portsmouth, N. H. ....	September 23, 1903
Fred E. Hanson .....	Portland, Me. ....	September 23, 1903
Harry F. G. Hay .....	Westbrook, Me. ....	September 23, 1903
Frank Hewins .....	Augusta, Me. ....	September 23, 1903
J. Edward Huggard .....	Brewer, Me. ....	September 23, 1903
Abel Hunt .....	Bangor, Me. ....	September 23, 1903
J. F. Jefferts .....	Livermore Falls, Me. ....	September 23, 1903
John T. Kelleher .....	Bangor, Me. ....	September 23, 1903



## LIST OF PERSONS—Concluded.

Name.	Residence.	Appointment.
Herbert G. Lilly.....	New Sharon, Me.....	September 23, 1903
Amanda M. McIntire.....	South Berwick, Me.....	September 23, 1903
Henry W. Plummer.....	Augusta, Me.....	September 23, 1903
Harry C. Quinby.....	Saco, Me.....	September 23, 1903
H. W. Rich.....	Portland, Me.....	September 23, 1903
W. Guy Sawyer.....	Gardiner, Me.....	September 23, 1903
J. Walter Strout.....	Thomaston, Me.....	September 23, 1903
Fred J. Tibbetts.....	Harmony, Me.....	September 23, 1903
Wilder S. Varney.....	Bangor, Me.....	September 23, 1903
R. A. Wing.....	Livermore Falls, Me.....	September 23, 1903
Roscoe E. Wood.....	Richmond, Me.....	September 23, 1903
George R. Bucknam.....	Yarmouth, Me.....	November 10, 1903
William A. Cosgrove.....	Biddeford, Me.....	November 10, 1903
John S. Cushman.....	Portland, Me.....	November 10, 1903
John G. Downs.....	Portland, Me.....	November 10, 1903
A. L. Eastman.....	Boston, Mass.....	November 10, 1903
John E. Feeney.....	Portland, Me.....	November 10, 1903
Emma F. Guild.....	Old Orchard, Me.....	November 10, 1903
S. A. Hall.....	Casco, Me.....	November 16, 1903
B. E. McDonough.....	Portland, Me.....	November 10, 1903
Fred W. B. Martin.....	Portland, Me.....	November 10, 1903
James A. Martin.....	Portland, Me.....	November 10, 1903
John C. Nichols.....	South Windham, Me.....	November 10, 1903
H. W. Nickerson.....	Portsmouth, N. H.....	November 10, 1903
W. L. Roberts.....	Canton, Me.....	November 10, 1903
Leroy Spiller.....	Mechanic Falls, Me.....	November 10, 1903
Everett C. Staples.....	Welchville, Me.....	November 10, 1903
Grace Thayer.....	South Paris, Me.....	November 10, 1903
L. A. Wentworth.....	Sanford, Me.....	November 10, 1903
Frank B. Wood.....	Hallowell, Me.....	November 10, 1903
Robert H. Byles.....	Lewiston, Me.....	November 17, 1903
William L. Girt.....	Fairfield, Me.....	November 17, 1903
J. L. S. Hincks.....	Old Town, Me.....	November 17, 1903
E. J. Kelly.....	Orono, Me.....	November 17, 1903
Fred T. Leavitt.....	Gulford, Me.....	November 17, 1903
F. A. Nye.....	Monroe, Me.....	November 17, 1903
Galen S. Pond.....	Bangor, Me.....	November 17, 1903
F. E. Sherman.....	Bar Harbor, Me.....	November 17, 1903
William J. Tower.....	South West Harbor, Me.....	November 17, 1903

The names and addresses of the undertakers registered under the act of 1903 are given in the following list.

Clara T. Adams.....	Farmington, Maine.
Elmer M. Adams.....	Winthrop, Maine.
Frederick Perkins Adams.....	Farmington, Maine.
Albert M. Ames.....	Stockton Springs, Maine.
Frank L. Amesbury.....	Gardiner, Maine.
Alva M. Andrews.....	South Woodstock, Maine.
Frank R. Andrews.....	South Woodstock, Maine.
Isaac W. Andrews.....	South Woodstock, Maine.
George Frank Austin.....	York Village, Maine.
Guy S. Baker.....	Millinocket, Maine.
Henry M. Barrett.....	Weld, Maine.
Harvey E. Bates.....	Augusta, Maine.
F. Michael Berard.....	Biddeford, Maine.
Albion G. Betts.....	Houlton, Maine.
Elzear G. Bibber.....	Eastport, Maine.
James Freeland Bolster.....	Norway, Maine.
Maud M. Bolster.....	Norway, Maine.
Samuel H. Bond.....	East Jefferson, Maine.
George Augustus Bosworth.....	Litchfield Corners, Maine.

Albert Houcher.....	Westbrook, Maine.
Russell Eugene Bowers.....	Sherman Mills, Maine.
Albert C. Bradbury.....	Newport, Maine.
Fred C. Bradbury.....	Saco, Maine.
Charles J. Bragdon.....	Monmouth Maine.
Arthur Wooster Brown.....	Bar Harbor, Maine.
Charles H. Brown.....	Lovell, Maine.
Llewellyn W. Brown.....	Gorham, Maine.
Abner Dustin Bryant.....	Freeport, Maine.
Everett N. Bucknam.....	Yarmouth, Maine.
Hal C. Bunker.....	Franklin, Maine.
Edgar A. Burpee.....	Rockland, Maine.
Allen R. Burton.....	Hartland, Maine.
William F. Buzzell.....	Houlton, Maine.
Charles J. Carl.....	Winn Maine.
Charles Francis Chandler.....	Phillips, Maine.
Norman Charles.....	Fryeburg, Maine.
Adelbert P. Chick.....	Orrington, Maine.
John M. Clark.....	Bath, Maine.
William Z. Clayton.....	Bangor, Maine.
Nathaniel M. Cobb.....	Parkman, Maine.
George W. Colburn.....	Gardiner, Maine.
Andrew F. Cole.....	Sedgwick, Maine.
Edward G. Cole.....	Buckfield, Maine.
Charles E. Coombs.....	Belfast, Maine.
Harry Douglass Cony.....	Bath, Maine.
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